THE NEWFOUNDLAND HOUSEHOLD RESETTLEMENT PROGRAMS: A CASE STUDY IN SPATIAL REORGANIZATION AND GROWTH CENTRE STRATEGY

DAVID S. COURTNEY


CENTRE FOR NFLD. STUDIES
JUL 22 1974
MEMORIAL UNIVERSITY
OF NEWFOUNDLAND

THE NEWFOUNDLAND HOUSEHOLD RESETTLEMENT PROGRAMS: A CASE STUDY IN SPATIAL REORGANIZATION AND GROWTH CENTRE STRATEGY

by


David S. Courtney

Thesis Submitted in Partial Fulfillment of
the Requirements for the Degree of

Master of Arts

Department of Geography
Memorial University of Newfoundland

August 1973

ABSTRACT

The Newfoundland Household Resettlement Programs represent a government policy designed to redistribute rural population within a region. This type of structural change involves concentration into or near larger centres offering goods and services and employment opportunities. The primary objective of this thesis is to provide a spatial analysis of household resettlement for the period 1965-1972 in terms of a proposed complementary growth centre strategy. This strategy incorporates the notion of growing service centres functioning as the natural growth centres of the province and the idea of expanding the growth centre concept to include growth area. The importance of the rural population segment achieving dual accessibility to these service centres and to areas of rural employment opportunities is stressed.

A modification of Hermansen's suggested synthetic approach to growth centre research provides the theoretical and organizational framework for the study. A progressive four-stage examination is developed. The descriptive stage is concerned with the region's structural characteristics and changes necessitating population redistribution, the spatial household resettlement patterns, and the theory, policy applications and empirical

identification of growth centres for the province. The positive stage interprets the resettlement patterns in terms of the nature and emphasis of the various Programs during the study period. The normative stage proposes an optimal form of complementary resettlement and growth centre program. Finally, the control stage outlines several basic policy needs to achieve the normative situation.

The main conclusion of the study is that the revealed pattern of short distance movement into comparatively small size reception centres reflects, in part, the social service nature of the Resettlement Programs' objectives. It is felt that this pattern should be further encouraged, consonant with a policy of simultaneous urban and rural development.

During the study, several secondary objectives are accomplished, including: new uses for telephone system data; a methodology for the identification of the natural growth centres in the province; the utilization of a marginality index; and finally, the application of Transaction Flow Analysis, a model designed to identify salient flows.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

The completion of this thesis was facilitated by the kind assistance of several individuals and institutions. I would like to express my sincere appreciation to the following: Mr. Keith Storey for his excellent supervision and continuous encouragement; Dr. Henry McCutcheon for his careful reading and constructive criticism; Mr. A. Hall for the task of editing; Mr. Chris Cooper for the final preparation of figures; various other members of the Department of Geography for their advice, including Mr. Michael Crane, Mr. Geoffrey Farmer, and Mr. Robert Maher; Mr. Ken Harnum of the Department of Community and Social Development; Messrs. Jim Connolly and Fred Moss of Canadian National Telecommunications; Messrs. George Gamberg and Robert Hart of the Newfoundland Telephone Company; Mr. Tom Espie of the Canadian Council on Rural Development; officials of the Department of Regional and Economic Expansion, Atlantic Development Board, and Atlantic Development Council; the staff of Memorial University Library; the Supervisor and staff of the General Office, Temporary Building; Mrs. M. Rose, and finally my wife, Patricia, for her encouragement and patience.

Financial assistance was provided in the form of a Fellowship from the Canadian Transport Commission and a grant for computer expenses from the Institute of Social and Economic Research.

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION AND OBJECTIVES

A. The Problem

Since the Second World War developmental studies have broadened their base of enquiry to consider internal variations in national prosperity in addition to the traditional studies of international disparities. While many have long argued that the gap between rich and poor nations is widening rather than narrowing the recognition that similar characteristics exist between regions within the wealthier nations has only recently become a question of national concern. Like most developed countries, Canada has a regional disparity problem with the Maritimes as a whole and Newfoundland in particular constituting a major lagging area (Figure 1.1).

Simple economic indicators for Newfoundland in 1971 such as personal income per capita at 57.7% of the Canadian average, labor participation rates, 44.9 compared to 56.0 (Economic Council of Canada, 1972, 20), and unemployment rates, 11.7% versus 6.4% nationally (Statistics Canada, Seasonally Adjusted Labor Force Statistics, 71-201) superficially demonstrate the magnitude of the province's problems. Low income and high unemployment levels

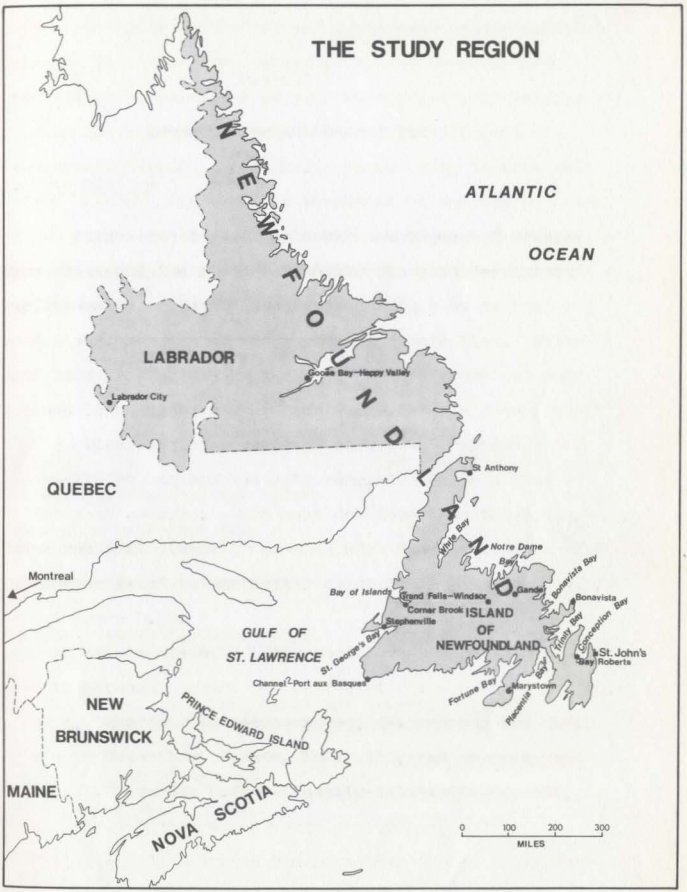

THE STUDY REGION
ATLANTIC
OCEAN
NEWFOUNDLAND
LABRADOR
Goose Bay–Happy Valley
Labrador City
QUEBEC
St. Anthony
Notre Dame Bay
Montreal
Bay of Islands
Grand Falls–Windsor
Gander
Bonavista
Bonavista Bay
Corner Brook
Stephenville
ISLAND OF NEWFOUNDLAND
GULF OF ST. LAWRENCE
St. George's Bay
Trinity Bay
Conception Bay
St. John's
Roberts
Channel-Port aux Basques
Fortune Bay
Marystown
Placentia Bay
NEW BRUNSWICK
PRINCE EDWARD ISLAND
MAINE
NOVA SCOTIA
0 100 200 300
MILES

Figure 1.1

generally indicate insufficient employment opportunities which in turn are often reflected in the level of net migration. Newfoundland is no exception, 36,000 persons leaving the province between 1961 and 1969 (Atlantic Development Council, 1971, 27). In addition to jobs and higher incomes, migrants are attracted to the "have" areas by the provision of superior public services. Shortages in several facilities provide examples of such inadequacies in the province.

TABLE 1.1

PUBLIC SERVICE FACILITIES

Facility	Newfoundland	Canada
Persons per Hospital Bed (1966)	127.9	94.8
Households Connected to Community Water (1966)	42.3%	77.8%
Telephones per 100 population (1971)	26.0	45.2
Average Highway and Rural Road Mileage per Square Mile (1966)	0.03	0.11

Sources: Boni, Watkins, Jason and Company, Economic Outlook for Province of Newfoundland, New York, 1969, p. 121.
Statistics Canada, Road and Street Mileage and Expenditure, 1968, 53-201.
Statistics Canada, Telephone Statistics, 1972, 56-203.

These economic and social indicators are symptomatic of a variety of problems including a narrow manufacturing base, underutilized natural resources, a peripheral location, limited entrepreneurship and an obsolete settlement pattern. Such factors are often interdependent, such that the solution to one problem contributes to the solution to others. An obsolete settlement pattern, for example, underlies many other structural characteristics. Reorganization of the settlement system, therefore, should facilitate other development efforts. Several writers have attributed extreme importance to the settlement factor selected for examination in this thesis:

> The economic and social development of the nation is reflected in its pattern of settlement; its system of flow and exchange of commodities, money and information; its patterns of commuting and migration, ... and if there is a spatial pattern corresponding to each 'stage' of economic development, it may be further suggested that there is an optimal strategy for spatial transformation from one stage to the next (Friedmann and Alonso, 1964, 2).

> A settlement system in the framework of a particular system of socio-economic relations should create optimal conditions for production and will serve its purpose as long as it is capable of fostering technical, social and economic progress. When there is no progress, when production does not increase and the standard of living is not going up, the reasons may be found in an obsolete settlement system, which should be abolished and replaced by a new one, better suited to changed conditions (Pioro, 1972, 172).

The province consisting of the island of Newfoundland with 43,000 square miles and mainland Labrador with 113,000 square miles approximately, had a total population of 522,104 in June, 1971, with an arithmetic density of 11.5 and 3.3 persons per square mile respectively (Statistics Canada Census, 1971).

Except for a few inland and coastal urban centres, a dispersed coastal population distribution remains (Figure 2.2), a result of the traditional inshore small scale fishing operations and lack of inland agricultural and urban development. Dependency on coastal transport in conjunction with an inadequate road network has helped perpetuate the settlement pattern.

Figure 1.2 shows the 1966 total and urban population distribution by federal census divisions. This Census was selected for certain data, because it falls closest to the start of the study period, 1965-1972. Except for census division 1, there is a uniform distribution of total population amongst the divisions. The main contributing factor for this exception is the distribution of urban population.[1] Census division 1 contained 49.9% of the province's urban population, and except for divisions 5 and 6 with 11.5% and 13.3% respectively, all other divisions

---

[1]The Canadian Census defines communities over 1,000 as urban.

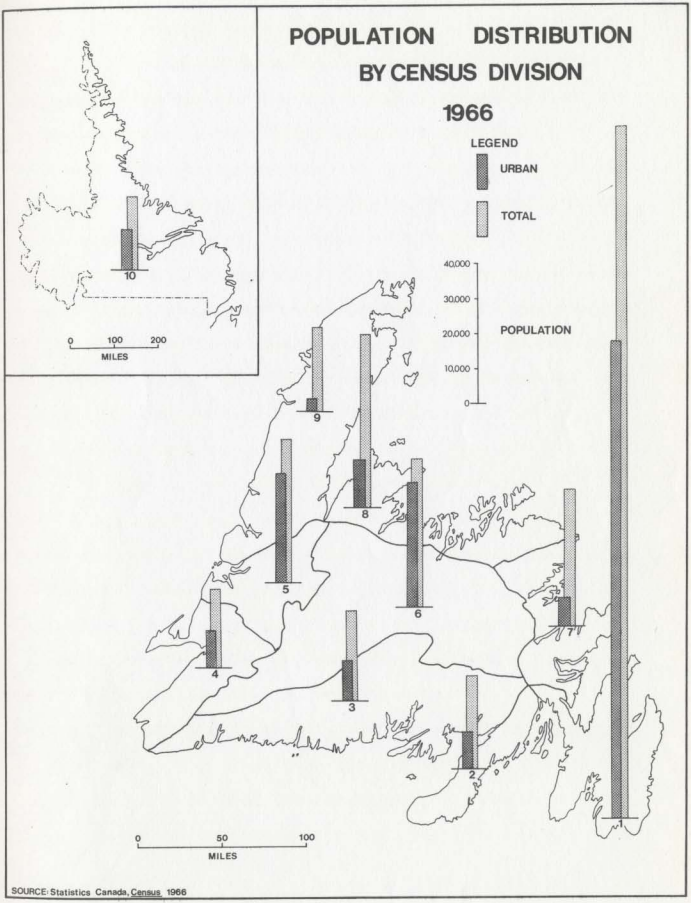

POPULATION DISTRIBUTION
BY CENSUS DIVISION
1966
LEGEND
URBAN
TOTAL
40,000
30,000
20,000
10,000
0
POPULATION
10
0 100 200
MILES
9
8
5
6
7
4
3
2
1
0 50 100
MILES
SOURCE: Statistics Canada, Census, 1966

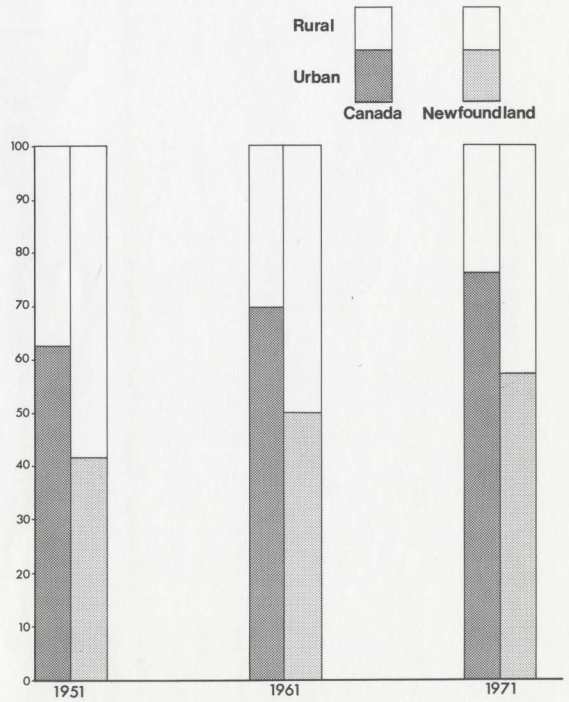
Figure 1.2

contained below 5.0% each.

The urbanization process is summarized in Figure 1.3. While the reversal in the urban-rural ratio from 1951 to 1971 indicates a rapid urbanization trend, there remains a large rural segment.

The population distribution according to the number and size of settlements is indicated in Table 1.2. During the period 1951-1971 the smallest size category, 6, recorded the most significant loss in both its share of settlements and population while the remaining categories experienced an increase. Since 1961, categories 4 and 5 recorded a loss in share of population. These results indicate a slow initial trend towards absolute concentration particularly at the expense of the lower levels in the hierarchy.

Dispersal is a major aspect of the continuing significant rural component. This phenomenon is manifested in the notion of isolation or marginality. A simple index of marginality is considered to be that proportion of population located beyond an acceptable commuting distance of certain size centres. Based on a travel time of 45 minutes and centre size categories of greater than or equal to 2000 and greater than or equal to 5000 population, it was found that 14.2% and 41.7% respectively of the province's population in 1966 resided in marginal



SOURCE: Statistics Canada, Census 1951, 1961, 1971.

Figure 1.3

TABLE 1.2

POPULATION DISTRIBUTION BY SETTLEMENT NUMBERS AND SIZE

(Percentages)

Size Category	Settlement Size	1951		1961		1971	
		Settlement	Population	Settlement	Population	Settlement	Population
1	>10,000	00.2	19.5	00.1	19.4	00.2	21.9
2	5,000-9,999	00.2	03.4	00.5	07.0	00.8	11.7
3	2,000-4,999	01.2	10.4	01.5	11.0	03.2	14.9
4	1,000-1,999	02.3	08.2	03.8	12.3	04.7	8.7
5	500- 999	11.3	15.2	12.1	19.4	14.5	17.9
6	< 500	84.8	43.3	82.0	30.9	76.6	24.9

Source: Statistics Canada, Census, 1951, 1961, 1971.

areas.[2]

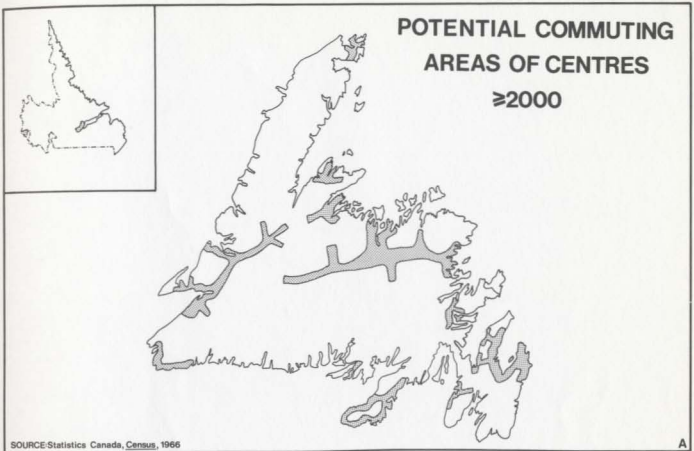
Figure 1.4 shows the marginal areas of the province while Figure 1.5 indicates the distribution of marginal population as a proportion of each census division's total population. The lack of large centres, or an adequate road network, would explain the high incidence of marginality in the coastal census divisions 2, 7, 8, 9, and 10. On the other hand the concentration of population into or near large centres connected by the Trans-Canada Highway running through divisions 4, 5, 6, and 1 would explain the more favourable results in these areas.

It was suggested earlier that this pattern of settlement distribution underlies many other structural problems affecting the level of economic and social development in the province. Three such problems include a peripheral location, underdeveloped economic structure, and difficulty in meeting demand for public and private services.

Newfoundland shares with many underdeveloped regions the problem of a marginal location. A peripheral location respecting the North American continent (Figure 1.1) places

---

[2]The decision to use 45 minutes travel time in the absence of any empirical research done in the province was based on other relevant assumptions and findings. The Atlantic Development Board classified communities as isolated which were more than 30 miles by highway from major centres (Atlantic Development Board, 1969, 52). This criterion also corresponds to Hansen's 45 minute commuting time for Norway (C. Hansen, 1972, 10). The size categories were selected primarily because of their correspondence with service centres identified in the region (Chapter IV). The positive relationship between settlement size and service function has been recognized in geographic research (Berry, 1967, 37).


POTENTIAL COMMUTING
AREAS OF CENTRES
≥2000
SOURCE: Statistics Canada, Census, 1966
A

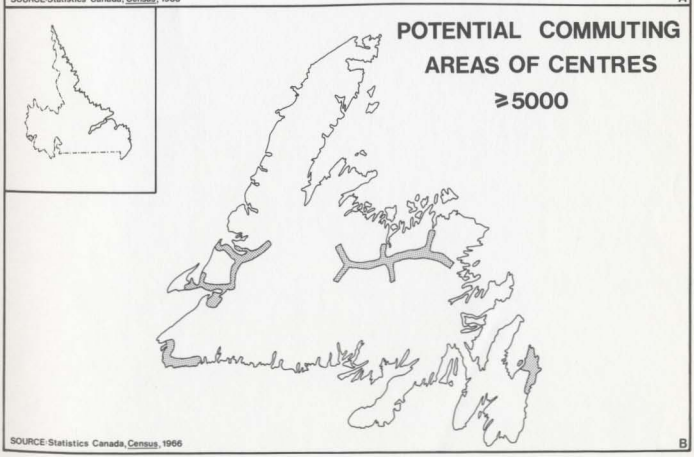
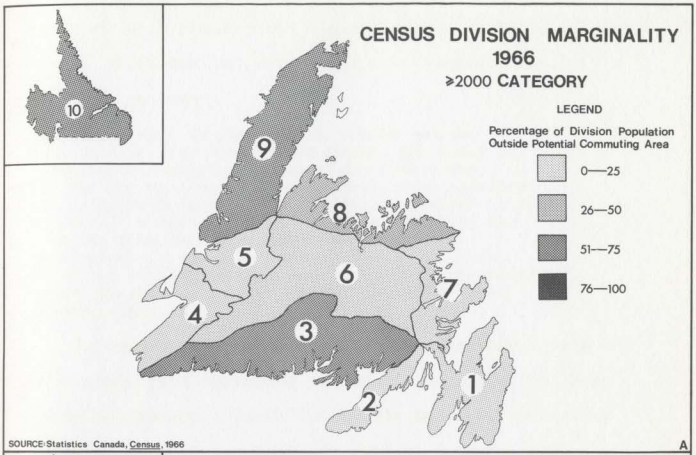

POTENTIAL COMMUTING
AREAS OF CENTRES
≥5000
SOURCE: Statistics Canada, Census, 1966
B

Figure 1.4


CENSUS DIVISION MARGINALITY
1966
≥2000 CATEGORY
LEGEND
Percentage of Division Population
Outside Potential Commuting Area
0—25
26—50
51—75
76—100
10
9
8
5
6
7
4
3
2
1
SOURCE: Statistics Canada, Census, 1966
A

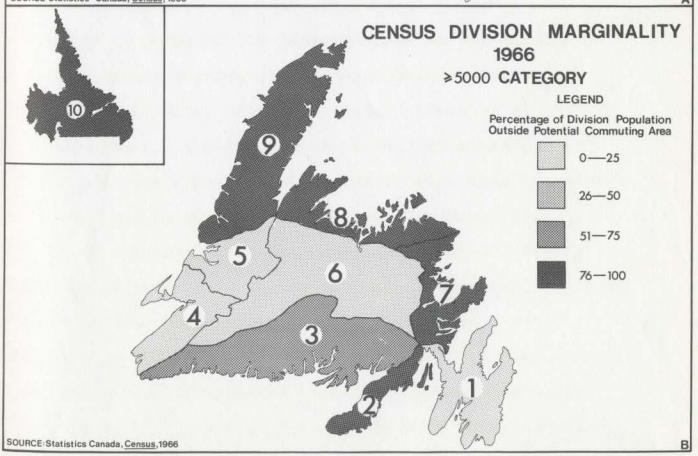

CENSUS DIVISION MARGINALITY
1966
≥5000 CATEGORY
LEGEND
Percentage of Division Population
Outside Potential Commuting Area
0—25
26—50
51—75
76—100
10
9
8
5
6
7
4
3
2
1
SOURCE: Statistics Canada, Census, 1966
B

Figure 1.5

the province at a significant disadvantage. In terms of provincial developmental planning Grose's comment is particularly relevant:

> There are many things that a region can do to enhance its locational advantages, but many features of nature and position within the nation are unalterable and a realistic appraisal of a region's advantages and disadvantages is an essential starting point for understanding the problem involved in encouraging economic development. In this regard, there is little point in minimizing the importance of incremental costs associated with a Newfoundland location (Grose, 1971, 25).

An operational framework for understanding a region's economic status and assessing its growth potential has been developed by Perloff (Figure 1.6). The relative advantages and disadvantages of locating industry in a region are considered in terms of its accessibility to the necessary input and output factors including materials, labor, and markets. This scheme serves "to focus attention on the range of possible growth, and point up, for example, the fallacy of the extreme local economic development approach which can lead to regard every region and community as capable of limitless economic expansion". (Perloff, 1963, 30). Appreciating that it is an oversimplified indicator, it does provide the framework to categorize the region. For example, a priori, it would appear that the province might fall into several categories with poor access dimensions including 3, 4, 7, and 8. The availability in Newfoundland

PERLOFF'S SCHEMATIC PRESENTATION OF TYPES OF REGIONS THAT CAN EXHIBIT DIFFERENT GROWTH POTENTIALS

		Good access to basic inputs* from external regional and national sources		Poor access to basic inputs* from external regional and national sources	
		Good access to basic inputs in home region	Poor access to basic inputs in home region	Good access to basic inputs in home region	Poor access to basic inputs in home region
Poor access to external regional and national markets	Poor access to markets in home region	1 II	2 I	3 I	4 0
	Good access to markets in home region	5 III	6 II	7 II	8 I
Good access to external regional and national markets	Poor access to markets in home region	9 III	10 II	11 II	12 I
	Good access to markets in home region	13 IV	14 III	15 III	16 II

*Not only basic resources but important intermediate sources need to be considered.

NOTE: Roman numerals indicate number of "good" access dimensions, and suggest relative over-all locational advantages or disadvantages.

SOURCE: H.S. Perloff, How A Region Grows, New York: Committee for Economic Development, 1963, Page 31

Figure 1.6

of key site characteristics of deep harbours and airport facilities, combined with the future need in North America for transshipment centres could place the province in category 10. Emphasis will have to be placed, nevertheless, on improving accessibility to basic inputs and markets within the province, so that a more favourable situation such as represented by region 5 can be developed.

Regarding the economic structure, it is frequently suggested that the near absence of a sound and diversified urban manufacturing base is a major cause of the region's problems. For 1971, it was estimated that approximately 15.0% of the province's work force was engaged in manufacturing compared to 30.0% nationally while 25.0% remained in primary activities as opposed to 10.0% for Canada.(Economic Council of Canada, 1972). Furthermore, it is felt that the structure of the manufacturing sector in the province prevents the creation of many external economies considered necessary for further development (Grose, 1971, 76). The possibilities of external economies are related to present and future spatial industrial agglomerations and the accompanying degree of industrial or sectoral interaction (linkages). A basic premise in development theory is that a highly developed economy is characterized by diversification and high linkages between industries resulting in possible external economies for

shown in Table 1.3 imply an increasing demand for goods and services.[4]

TABLE 1.3

INCOME REDISTRIBUTION

Percentage Distribution of Personal Income per capita, 1951 and 1969

Income	1951	1969
< $1,000	0.35	0.72
$1,000 - 5,000	91.49	56.72
$5,001 - 10,000	6.26	34.58
> $10,000	1.90	7.98

Source: Historical Statistics of Newfoundland and Labrador, Table H-3, 1971.

A prerequisite for solving the location, economic structure, and goods and service demand problems is some form of population concentration. The distribution pattern previously described is not conducive to developmental efforts required to overcome these types of problems.

---

[4]The development of a cash economy replacing a near subsistence way of life in most rural areas is a recent phenomenon. Commencement of mining and forestry operations at the turn of the century combined with the construction of various American military bases in the early 1940's facilitated this development (Government of Newfoundland and Labrador, 1967, 14).

existing and prospective manufacturing plants. Such linkage effects (input-output relations) have been used in identifying sectoral growth poles (Darwent, 1969). Digraph Theory[3] has been employed in examining input-output data to determine the structure of the Newfoundland economy (Storey, 1972). Storey found tenuous linkages limited in number indicating a "low level of structural development within the economy" (Storey, 1972, 11).

The primary sector of the economy including extractive and processing activities in mining, forestry, fisheries, and agriculture suffers from structural problems also. Fragmentation, very small-scale operations and insufficient processing in natural resource exploitation characterize several components in the rural sector (Copes, 1972, 77; Government of Newfoundland and Labrador, 1967, 46; Grose, 1971, 12).

Another problem facing the Canadian and Newfoundland governments relates to changes in income. Increase in the province's personal income per capita, 10.7% cumulatively per annum compared to 8.6% for Canada during 1951-1971 (Economic Council of Canada, 1972, 20) and redistribution as

---

[3]Digraphs or the theory of directed graphs provides a mechanism for an input-output table to be converted to graphic form (Campbell, 1971, 4). Digraphs "serve as mathematical models of empirical structures and properties of the empirical world" (Campbell, 1972, 83).

Increased accessibility to basic labor and material inputs and markets in the province, for example, requires a certain degree of population concentration as well as improvements in transportation facilities. The development of both urban and rural employment opportunities similarly requires population concentration to achieve necessary economies of scale and linkage effects. This suggests that there is potential in the urban and rural sectors of the economy. Recent reports and government strategies confirm this suggestion. For example, opportunities for manufacturing were discussed in the recent report by Grose. His list included such labor-oriented industries as building materials, furniture and wood products, paper converting and allied products, metal working, plastics, electronics, and industries utilizing the availability of low cost electric power (Grose, 1971). He also recognized that development depends greatly on improved extraction and processing of the available natural resources. Opportunities in mining, forestry, fisheries and agriculture were cited. Similarly, the Atlantic Development Council in its 1971 report outlining a strategy for the economic development of the Atlantic Region stressed the potential in both types of urban and rural activities (Atlantic Development Council, 1971).

Recent government actions indicate an increasing awareness of the dual economic base. The federal urban policy of the Department of Regional Economic Expansion (Chapter III) is complemented by provincial concern for rural development evidenced by the establishment, for example, of a Rural Development Authority to assist small scale rural based industries.

Finally, satisfying the demand for personal and public goods and services necessitates increasing accessibility to higher level centres where such conveniences can normally be provided.

One method employed to solve the underlying settlement distribution problem in the province has been a series of resettlement programs designed to redistribute and concentrate population. The contribution of the Newfoundland Household Resettlement Programs as an instrument of government policy towards achieving such settlement pattern reorganization is the focus of this research.

B. Objectives and Hermansen's Theoretical Framework

The primary purpose of the thesis is to provide a spatial analysis of the Newfoundland Household Resettlement Programs within the context of the development and planning methodology known as growth centre strategy. There are

several reasons for attempting such a study. While the Programs have been documented and researched by economists and sociologists (Copes, 1972; Iverson and Matthews, 1968; Robb and Robb, 1969; and Wadel, 1969), no overall spatial analysis has been made utilizing the available data for the period 1965-1972. Secondly, the specific identification of a growth centre strategy relevant to the study region, the province of Newfoundland, is necessary considering the general use of the concept in past and present Federal-Provincial development policies. Finally the thesis is a response to Hermansen's plea for empirical research contributing to a synthetic approach to the study of development (growth) poles and centres (Hermansen, 1972).

The concepts of growth poles and centres have become elusive as evident in their application in theoretical and empirical research (Darwent, 1969). Hermansen's suggested framework provides a suitable mechanism to consolidate and classify various theories and studies dealing with these concepts. The eventual aim of his approach is the attainment of a general theory of development poles and development centres. Before examining the scheme several preliminary definitions are necessary.

Hermansen considers development as consisting of economic, cultural, social, and political-administrative sub-processes interacting to cause society to advance according to predetermined value judgements.

The concept of development pole or centre can be understood by considering the underlying principle of 'decentralized concentration'. Hermansen in discussing the importance of the principle in the total context of national and regional development suggests:

> In its broadest sense, development pole policy in a geographical context can be said to aim at controlling the evolving system of urban centres. This may involve reinforcing centres at the intermediary level as counteracting poles to the possibly overdeveloped national centres at the upper levels in the hierarchy. It may, however, also involve the creation of a limited set of national centres of gravity as a means of concentrating national development efforts. In the latter case, the focus of the policy will be at the upper level of geographical poles and on problems of national development, while in the former case, the focus will be at the intermediary level and on problems of regional development. In still other situations, the focus may be on rural development, i.e., agriculture, etc., and the system of centres to serve the dispersed rural population with essential marketing facilities and private and public services. In this case, many more centres at the lower levels will be involved. While the first type of policy, focusing on national development and a few superior centres may be termed a policy of geographical concentration and centralization, the last two types may be termed policies for decentralized concentrations. The essential feature in all cases is, however, the stress on concentration in national, regional and local geographical space respectively (Hermansen, 1972, 60).

The application of the decentralized concentration principle provides a mechanism for spatial polarization or concentration of investment, developmental efforts, and population in a few selected centres or areas. The 'unbalanced growth' doctrine which underlies this principle, considers the polarization strategy necessary to achieve

faster and sustained development (Hirschman, 1958).

Hermansen's theoretical framework classifies studies according to their scope and approach. Studies of development are either global or partial in scope. Global studies, which he admits are rare,[5] involve analysis of the mosaic of the economy, cultural, social and political-administrative sub-processes and their interrelationships. Partial studies focus on only one or two of the sub-processes and, while recognizing other components, involve a deeper analysis of a selected process.

Studies can also be classified according to approach; descriptive, positive, normative, and control. Hermansen summarizes these as follows:

> The descriptive approach tries to give an answer to the question of what, i.e., what is being labelled development. In short, the descriptive approach aims at providing conceptual frameworks and operational measures and yardsticks which help to identify and describe existing and feasible trends of development. Although the descriptive approach may appear a neutral one, void of value premises, this is not the case since any description serves certain purposes which guide the selection of variables and the choice of yardsticks. The positive approach is a more ambitious one since it goes beyond the mere description of what is to answer the question of why patterns of development are as they are. In other words, a positive analysis purports to explain development by reducing the actual observations to results of causes implicit in the interaction between a number of variables smaller

---

[5] A notable exception is J. Friedmann, "A General Theory of Polarized Development", Working Paper, Santiago, Chile, 1967.

> than the number employed in the descriptive analysis. Furthermore, a positive analysis not only promotes understanding, but also provides tools for predictions of future processes of development. The most ambitious approach is the normative one which raises the question of the fundamental aims of development and tries to determine the optimal form for any development process. Basic to this approach is the explicit choice of value premises and their translation into some sort of objective function which trades conflicting values and aims against each other. Obviously, a normative approach to the study of development is a very difficult one, which can, perhaps, be employed only at a very general and highly abstract level. However, by posing the question of what ought to be, the normative approach provides important guidelines for analyses following the less ambitious and more pragmatic control or prescriptive approach. In this approach, the choice of basic value premises and the formulation of goals and objectives are left to the appropriate political authorities, and attention is focused on the question of how to intervene with collective actions and direct the process of development toward these goals (Hermansen, 1972, 14).

Specifically relating this scheme to the geographical aspects of a development pole theory, Hermansen outlines the following requirements:

> A development pole theory applicable to geographical space must in its descriptive version be able to identify the nature of the process of polarization that takes place in geographical space. In its positive version it must be able to explain this process by reference to the polarized nature of development in general and to the particular influence of geographical space as a frame of development... As a normative theory it should suggest criteria for optimum distribution of socio-economic, cultural and political-administrative activities among geographical poles and how the network of poles should be adjusted in time. ... and finally, from a control point of view, the theory must identify the degree of freedom for

> intervention, and the instruments and tools to employ in deliberate direction of the process, with the aim of achieving development goals derived as normative analysis (Hermansen, 1972, 17).

Hermansen's scheme was designed to classify existing theories and studies in terms of their scope and approach. For example, the central place theory is classified as positive or explanatory in approach while service centre and new town policies are grouped under the control or prescriptive approach.

C. Relation of Study to Hermansen's Theoretical Framework

The scope of the study is partial in at least two respects. First it is concerned with development of the structural change type, specifically population redistribution. The Newfoundland Resettlement Programs represent an explicit policy of spatial reorganization directed towards the redistribution and concentration of population in certain centres, "having strong employment prospects for the future, good community services ... and roads" (Department of Community and Social Development, 1971, 1). This form of development as discussed earlier is often considered necessary to alleviate the production, consumption, demographic, and spatial restraints associated with problem regions.

Growth centre strategies are designed to create new settlement systems in keeping with the development and planning goals of the region in question. Acceptance of a growth centre strategy results in various types of policies reflecting the fact that the character and functions of centres vary according to the different types of regions and the particular stage of economic and social development of an area. Kuklinski, for example, recognized two types of economic and social policies; investment policies involving, "the concentration of investment in well selected places ... leading to external economies, economies of scale and multiplier effects which minimize capital inputs for the implementation of the accepted set of objectives" (Kuklinski, 1971, i) and, more relevant to this research, modernization and reconstruction policies, "which apply the concept of polarized development as a strategy in the transformation of the existing pattern of urban and rural settlements" (Kuklinski, 1971, 1).

The second reason for classifying the study as partial in scope is that this particular form of settlement reorganization is applicable only to certain types of regions. It has been demonstrated that Newfoundland exemplifies a rural, sparsely populated region with structural characteristics and demands for change which require certain degrees of population concentration.

Problems of marginality, the development of a cash economy and the resultant demand for high order goods and services are evident.

For the development of such a region, it has been suggested that the process of deliberate restructuring of the settlement pattern resulting in larger and fewer settlements is an important component of growth centre policy (Allen and Hermansen, 1968, 49).

An appropriate growth centre strategy could provide a rationale for a resettlement scheme designed to redistribute population within a region. It is important to realize that growth centre and rural development strategies are not mutually exclusive as critics maintain. This criticism relies on the traditional bias of growth centre criteria towards large scale industrial complex manufacturing urban units. Instead, various types of growth centres functioning as small scale light manufacturing centres, resource processing centres, and service centres could be developed in rural problem regions.

While recognizing that alternative strategies may be required in certain viable or potentially viable remote rural areas where it would prove extremely difficult to pursue a growth centre policy, it is suggested that the strategy to be examined in this research, that of spatial polarization, is consonant with simultaneous urban and rural development. Hermansen's methodology classifying

studies as descriptive, positive, normative, or control in approach provides a suitable theoretical framework for the analysis. The scheme is modified, however, in that Hermansen's four approaches are considered as stages of problem analysis. Specifically the descriptive stage consists of a spatial analysis of resettlement in Newfoundland, the positive stage suggests reasons for these results, the normative stage attempts to formulate what the ideal type of resettlement program should be in the context of an applicable growth centre strategy and finally the control stage advocates formulation of policy based on the results of the preceding stages.

D. Methodology

1. Growth Centre Strategy Identification

A growth centre strategy relevant to the study region is discussed in the light of current literature and policy application. The notion of growing service centres functioning as "natural" growth centres is discussed. Since no readily available methodology exists for the region, one is suggested for the identification of these natural growth centres. The methodology involves the utilizing of several indices reflecting growth and centrality (structure), the modification of a trade centre hierarchy developed by Borchert and Adams (1963) and finally the application of new indicators involving, for example, new uses of telephone

data.

The employment of telephone data in the growth centre identification process constitutes a secondary objective. While telephone data, both call and system, have been used extensively in geographical research, there remain many uses to which the data can be put, both as indices of, and as the focus for, studies relating to the geography of communications in general (Abler, 1968, 10). When we consider that there is a "rich lode in the analysis of communications" (Meier, 1960, 104), it is noteworthy that relatively little is known of the nature and effect of this phenomenon in a developed society, where it plays an increasingly important role in decision making and spatial organization. Ackerman's plea for an understanding of the communications process (Ackerman, 1958, 25) is coupled with the concern of others who point to the "growing trend towards substitution of electronic communications for physical transportation" (McDaniel and Hurst, 1968, 56). Several geographers have accepted this challenge, but as Abler remarks, "In most instances in which geographers use communications flow data they are concerned with the utility of message flows as indices of interaction. Communications are used as an available metric rather than being considered as intrinsically worthy of research" (Abler, 1968, 10). A few recent works, which include Abler's, represent pioneer

attempts in considering telecommunications as a separate distinct area of research as opposed to the works utilizing telephone data as one of several measurements in gravity models, hinterland and political-economic integration studies.

2. Spatial Analysis of Resettlement Programs

The resettlement data is subjected to a series of tests or progressive steps of examination within a spatio-temporal framework. This method is designed to ascertain the degree of spatial "success" of the household resettlement according to the official objectives of the programs and the type of growth centre strategy suggested for the region.

Specifically, the examination focuses on the response of migrants at a census division level to selected push-pull factors reflecting a particular objective of increased accessibility to goods and services. For this purpose a simple linear regression technique is used. The next step examines movement at a specific micro-scale. Resettlement into identified growth centres, urban centres of various sizes, and fishery growth centres is analyzed. For the next test, two indices are utilized to measure migration distances. On the provincial scale, the flow between different size sending and receiving centres is measured, utilizing a relative distance technique developed

by Olsson (1965). Significantly strong flows are then identified at the census division scale by the application of a Transaction Flow Model (Brams, 1966). In the final test, a measure of accessibility is achieved by the use of the potential commuting area index similar to Hansen's for Norway (C. Hansen, 1972).

The distance measurements are developed in response to Hansen's suggestion that, "We also need to know more about the distance that residents of lagging regions would go in commuting on permanently moving to growth centres" (Hansen, 1968, 27); one reason is that the trade-off between migration and commuting distances to growth centres becomes a critical factor in planning the settlement pattern of the region and the type of resettlement needed. This factor is particularly significant when an important aspect of a growth centre strategy is considered.

The application of a growth centre philosophy provides a means for the concentration of investment and developmental efforts in a few selected areas to achieve faster and sustained growth. It is assumed by growth centre enthusiasts that the self-sustaining growth generated in the centre will eventually spread into the surrounding region in the form of transfer of capital, labour, and goods. While there remains a dearth of information on the exact nature and dynamics of such spread effects (Hoover, 1969, 362), the assumption should be considered in determining the

degree of population concentration necessary for regional development. If, for example, the impact of a centre is deemed to spread well into the rural periphery, resettlement may be required only to solve the problem of extreme isolation. Conversely, if spread effects are expected to occur within a relatively short distance of the centre, then a higher degree of population concentration may be necessary, especially if development of the rural area appears unlikely.

E. Summary of Objectives

Figure 1.7 summarizes the primary and secondary objectives of the thesis. The spatial analysis of the Resettlement Programs and the identification of a relevant growth centre strategy for the region are developed within Hermansen's theoretical framework. The interface between the two is particularly significant for this synthetic approach, since it specifies the variables and yardsticks contributing towards the process of polarization, namely the degree of population concentration attained and the type of growth centre strategy which complements this particular type of spatial reorganization.

Technique development and new data utilization comprise the secondary objectives. A technique for identifying growth centres was developed due primarily to

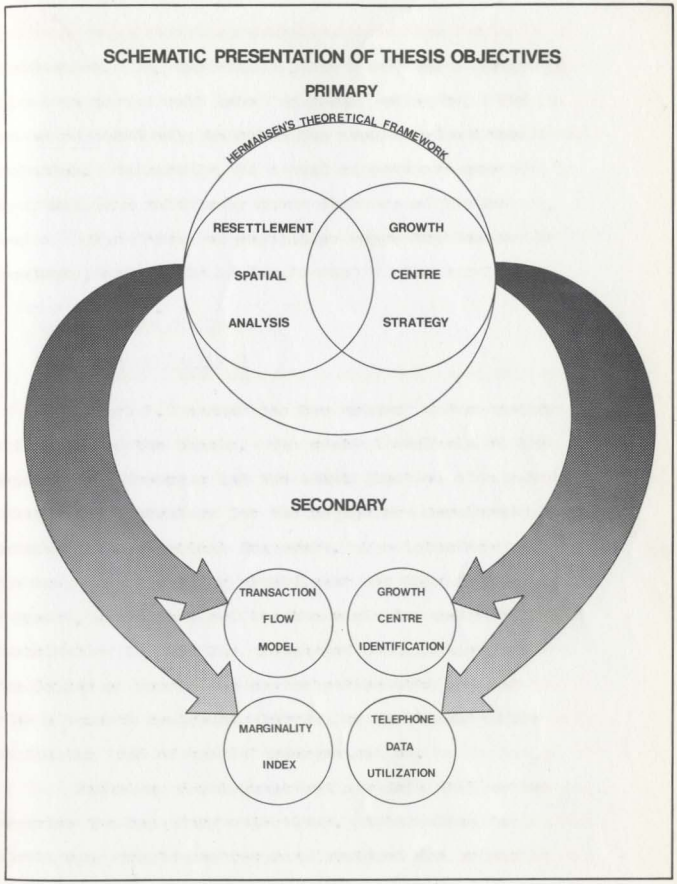

SCHEMATIC PRESENTATION OF THESIS OBJECTIVES
PRIMARY
HERMANSEN'S THEORETICAL FRAMEWORK
RESETTLEMENT SPATIAL ANALYSIS
GROWTH CENTRE STRATEGY
SECONDARY
TRANSACTION FLOW MODEL
GROWTH CENTRE IDENTIFICATION
MARGINALITY INDEX
TELEPHONE DATA UTILIZATION

Figure 1.7

the lack of any existing methodology for the region. The Transaction Flow Model was utilized to illustrate its use as a household resettlement distance indicator. The potential commuting area index was applied as a measurement of geographical isolation. Finally, various uses of telephone data were made to illustrate further the versatility of this largely undeveloped data source in geographical research.

F. Organization of Research

Chapter I has provided a structural analysis of the study region to indicate its development status and the changes occurring which could affect trends and demands for population redistribution and concentration. Chapter II reviews the history of the Newfoundland Resettlement Programs and identifies the official justification and objective of the policy having spatial implications. Chapter III examines the relevance of the growth centre concept for the region. Theoretical issues and policy applications are reviewed. The methodology for the identification of growth centres in the region is presented in Chapter IV. Chapter V consists of an examination of the spatial patterns of the Programs. Using a spatio-temporal approach general trends are determined in changing migration distances, and size and type of resettlement receiving centres. Chapter VI interprets the results of the spatial

patterns against the background of the Resettlement Programs' objectives. A normative approach to resettlement in terms of a complementary growth centre strategy is also suggested. The concluding Chapter follows Hermansen's control or prescriptive approach. The need for a resettlement policy is outlined. The general guidelines for such policy formulation are provided. The discussion in effect attempts to draw together the spatial reorganization needs of the province introduced in Chapter I, the basic philosophy of the Resettlement Programs reviewed in Chapter II, the growth centre strategy proposed in Chapters III and IV, and finally the spatial patterns described, interpreted, and recommended in Chapters V and VI.

CHAPTER II

THE NEWFOUNDLAND HOUSEHOLD RESETTLEMENT PROGRAMS: HISTORY, JUSTIFICATION, AND OBJECTIVES

The Newfoundland Household Resettlement Programs have been documented and researched mainly by economists and sociologists including Brox (1969), Copes (1972), Iverson and Matthews (1968), Robb and Robb (1969), and Wadel (1969). The history of the programs has been traced by several including Canning (1971). Official explanations of the objectives and rationale of the various programs have been presented in various government publications including ministerial papers and speeches by Rowe (1969 and 1970) and Sametz (1971).

However, as noted in Chapter I, neither a general spatial analysis of resettlement has been made nor an evaluation in terms of a growth centre strategy.

The purpose of this Chapter is not to repeat details contained in the above works but rather to include only those salient aspects relevant to the objectives of the thesis.

A. History

The first resettlement of "Centralization Program"[1] was initiated by the Newfoundland government in 1954 in response to requests for resettlement assistance from communities in Bonavista Bay (Figure 1.1). Under this program, assistance of $150.00 per household was granted if 100% of the householders in a community signified their agreement to move through a petition. This amount was raised to $600.00 in 1965. During the period 1954-1965, 110 communities were evacuated, involving some 8,000 people, under the program administered by the Department of Public Welfare. The moves were primarily from relatively isolated islands in the bays to nearby mainland communities with road connections and basic public services. There were no apparent restrictions on where people could relocate.

The Centralization Program was replaced by the Fisheries Household Resettlement Program, a joint federal-provincial government scheme administered by the respective Departments of Fisheries during the period 1965-1967. In 1967, the newly created Department of Community and Social Development assumed the provincial responsibilities. By 1970, under this second

---

[1]The plural "Programs" is deliberately used in this thesis in contrast to previous works. Various policy changes and official reference to distinct programs since 1954 substantiate this decision.

program, 16,114 people or 3,242 households had resettled and a further 119 communities were evacuated. Resettlement allowances had been raised to $1,000.00 per household, plus $200.00 for each household member. In 1966, the community petition requirement was lowered to 80%.

Prior to 1967 the resettlement pattern seemed to represent a response to 'push' factors primarily to overcome isolation inconveniences with no apparent governmental controls regarding destinations.

During the period 1967-1970 there was an attempt to shift the emphasis from the social welfare 'push' orientation to a 'pull' approach. Resettlement was encouraged into selected reception centres. Varying amounts of supplementary mortgage assistance up to $3,000.00 were made available for resettlement into designated fishery and other type growth centres. Individual households from communities not meeting the petition requirement were assisted to move to such centres. Four types of centres were designated in an attempt to relate resettlement to employment opportunities and rationalization of the fishing industry with an emphasis on strategically located fishing ports pursuing offshore operations. These included eight major fishery growth centres, seventeen other fishery growth centres, eleven other urban growth points, and thirty-two approved reception centres. Table 2.1 summarizes the designation criteria while Figure 2.1 shows locations of these centres.

TABLE 2.1

RECEPTION CENTRE CLASSIFICATION - 1967

Type	Sub-Category	Criteria	Centres Approved
A. Major Fishery Growth Centres	1. Approved Land Assembly Areas	1. Deep-sea fishing port 2. Past, present, or future major fish processing expansion requiring additional labour 3. Present or planned adequate water supplies 4. Year-round or sufficient operations for viable incomes 5. Requires "supplementary assistance inducements to attract labour" 6. Approved land assembly area in or within commuting distance of centre	Burin Fermeuse Fortune Grand Bank Harbour Breton Harbour Grace Marystown Trepassey
	2. Non-Approved Land Assembly Areas	1. Same as A-1 with exception of #6	Same as A-1
	3. Suitable communities within commuting distance	1. Within 15 miles normally by gravel road of A1, A2 2. Possibility of urban development 3. Approved by Housing Commission Resettlement Division and Town Council, if applicable	Garnish

TABLE 2.1 (Continued)

Type	Sub-Category	Criteria	Centres Approved
B. Other Fishery Growth Centres	-----	1. 10-100 processing plant or vessel workers demanded 2. Adequate or planned processing facilities 3. Warrants support 4. Land or acquisition costs exceed $300 per lot 5. Communities within 15 miles commuting distance of such centres	Bonavista Burgeo Carbonear Catalina Channel Englee Fox Harbour La Scie Old Perlican Port aux Basques Port-aux-Choix Port Union Riverhead, St. Mary's St. Anthony St. Mary's Twillingate Valleyfield
C. Other Growth Points	-----	1. Assured demand for resettlement 2. Significant permanent employment opportunities	Corner Brook Dunville Gander Grand Falls Labrador City Milltown St. Albans St. John's St. Lawrence Wabush Windsor

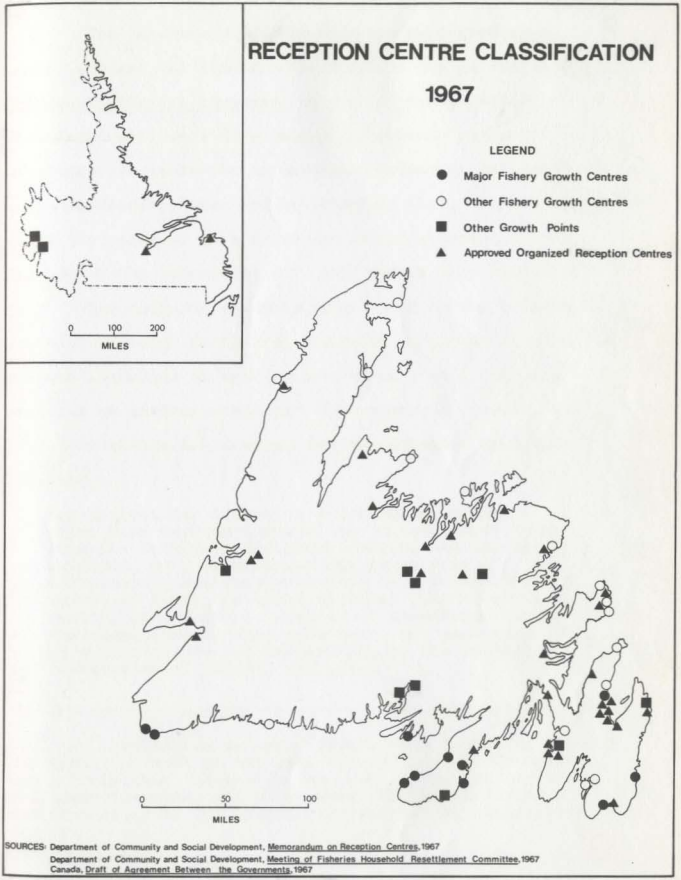
TABLE 2.1 (Continued)

Type	Sub-Category	Criteria	Centres Approved
D. Approved Organized Reception Centres	-----	1. Suitable for housing expansion 2. Suitable for integration of resettlers	Arnold's Cove Badger's Quay-Valleyfield Baie Verte Bay Roberts Bishop's Falls Botwood Carmanville Cartwright Clarenville Clarke's Beach, C.B. Deer Lake Freshwater, P.B. Glenwood Happy Valley Heart's Content Holyrood, C.B. Jerseyside, P.B. Lewisporte Mount Pearl Newtown, B.B. North River, C.B. Pasadena-Midland Placentia, P.B. Port Saunders, St. Barbe Rushoon, P.B. St. George's South River Spaniard's Bay Springdale Stephenville Trepassey Wesleyville

Sources: Department of Community and Social Development, Memorandum on Reception Centres, 1967

Department of Community and Social Development, Meeting of Fisheries Household Resettlement Committee, 1967

Government of Canada, Draft of Agreement Between the Governments, 1967



SOURCES: Department of Community and Social Development, Memorandum on Reception Centres, 1967
Department of Community and Social Development, Meeting of Fisheries Household Resettlement Committee, 1967
Canada, Draft of Agreement Between the Governments, 1967

Figure 2.1

The Department of Regional Economic Expansion (DREE) assumed the federal responsibilities in the Second Federal-Provincial Agreement of 1970. Resettlement is considered part of DREE's Social Adjustment and Rural Development Program and is designed primarily to coordinate with the Special Areas Policy (Chapter III). During the first two years of this Agreement which expires in 1975, 634 households consisting of 3,083 people were resettled.

The majority of moves were based on the household unit which by official definition included "a person or group of persons intending to move or moving as a unit from one dwelling to another dwelling" (Government of Canada, 1967, 2). Householders eligible for resettlement assistance included:

> Any householder living in a designated outport which has received approval for removal assistance from the committee and where destination has been approved, or a householder who moves from a subsequently designated outport to a designated centre or point, or other approved resettlement centre, or receiving location in accordance with the objectives of this agreement, not more than 18 months before the designation of the outport (Government of Canada, 1967,2).[2]

---

[2] 'Designated outport' refers to a community meeting the petition level of not less than 80% of the households, while 'committee' refers to the body of federal, provincial, and agency representatives responsible for the overall administration of the program (Government of Canada, 1967, 4).

Individual assistance was also provided for several reasons including "compassionate" assistance to widows, handicapped or incapacitated persons to move almost anywhere, except a designated sending community.[3]

It is readily obvious that the movement occurring under the Resettlement Programs represents a small proportion (5% approximately) of the province's total population. However, it has been suggested that most of the total household movement in the rural areas since 1965 at least took place under the programs (Brox, 1969, 63). Herrick points out, for example, that:

> While most of the total household movement in the rural areas of the province is assisted under the Resettlement Programs, the exact proportion is uncertain. Generalizing from our representative sample of 400 households, something like one-quarter of Newfoundland families have moved at least once as family units. An opponent of the government's resettlement program once suggested to the author that much of this movement by families can be attributed to that proportion. Our data do not

---

[3]The Resettlement Programs have been contrasted with other mobility schemes in this respect including the federally operated Manpower Program: "... the Mobility Program is entirely oriented to work, while the resettlement assistance may be authorized on compassionate and humanitarian grounds to people who are not in the labour force such as widows and incapacitated people. It appears then, that the Resettlement Program is rather less strictly economic in orientation and more broadly social in its approach than is the Manpower Mobility Program" (Economic Council of Canada, 1971, 157). Another basic difference in the two programs is that the Manpower Mobility Program is inter-provincial while the Resettlement Programs are strictly intra-provincial.

> support this view. Based on our 1968 interviews, it would appear that about 85% of the moves by Newfoundland families, then is existence, were made without any kind of government assistance, only 12% or about 1 in 8 of these family moves were assisted. If we look only at recent moves, those made between 1960 and mid-1968, when the interviewing was done, the resettlement program looms larger during those 7½ years, two thirds of the moves by families were made without government assistance, while one third of the moves were assisted (Herrick, 1971, 27).

During the study period, 1965-1972, 3,876 households resettled into 312 reception centres from 454 sending centres. An interesting aspect to note is that of the 312 reception centres, 93 or 29.8% later became sending communities. The distribution of these communities termed "intermediate centres" in this research is shown with the other sending and reception centres in Figure 2.2.

B. Justification

The basic arguments offered to justify the programs can be summarized from a survey of official sources, including a policy statement in the 1969 provincial Budget Speech and several ministerial papers and speeches.

1. Obsolete Population Distribution (Rowe, 1969,11)

Evidence of this phenomenon was presented in Chapter I. The original settlement pattern consisted of small dispersed coastal hamlets. The primary occupation was inshore fishing pursued in small open boats. Rationalization of the fishing industry was considered

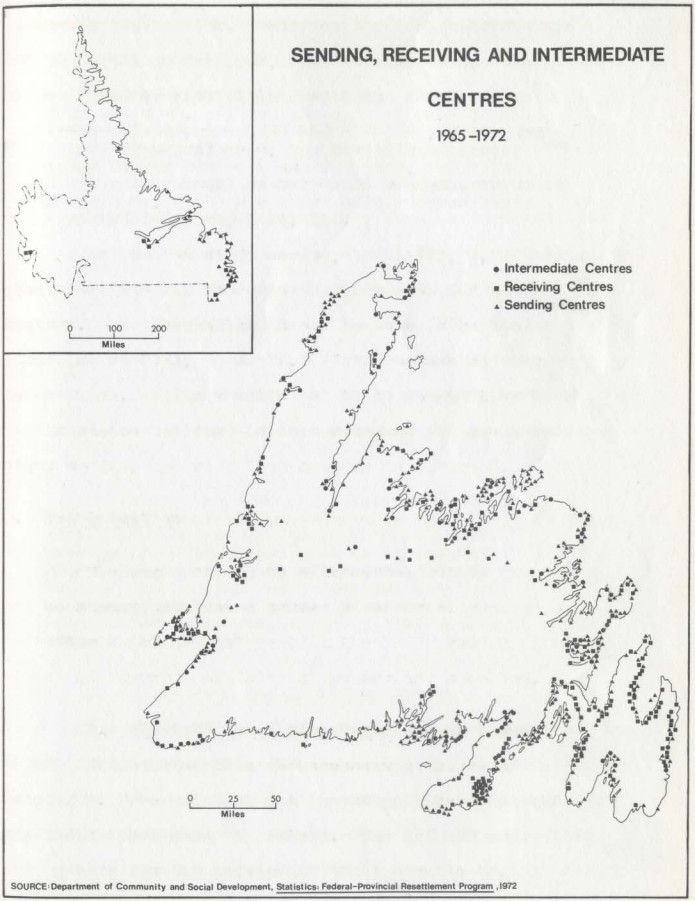

SENDING, RECEIVING AND INTERMEDIATE
CENTRES
1965-1972
• Intermediate Centres
▪ Receiving Centres
▲ Sending Centres
0 100 200
Miles
0 25 50
Miles
SOURCE: Department of Community and Social Development, Statistics: Federal-Provincial Resettlement Program, 1972

Figure 2.2

necessary emphasizing midshore and offshore operations requiring the concentration of some population into a few larger strategically located ports.

2. Overpopulation of Coastal Settlements (Rowe, 1969, 11). The ironic situation of overpopulation in a province with the lowest population density in Canada is similar to that being experienced in Norway with "too much space and too few people" (C. Hansen, 1972, 20). The suggestion of overpopulation is based on the limited potential in fishing, particularly the inshore sector. Copes in discussing overpopulation in economic terms alludes to the concept of comparative advantage when he suggests that;

> ... it is not the area per person that counts, but rather the balanced population and exploitable resources relative to adjacent geographical areas that must be considered. Newfoundland has the disadvantage of being located next to the North American mainland that still possesses large resources of unexploited resources, often of high quality (Copes, 1972,24).

3. Historical Concentration Trends

The original resettlement request from the communities in Bonavista Bay combined with the observation that, "the population in these places is bound to fall in any case" (Government of Newfoundland and Labrador, 1969, 26), encouraged the government to accelerate the natural process. The significant aspect, though, is that the

provincial government, as did DREE later, emphasized that the process of population redistribution and concentration should occur within the province. It was felt that this type of resettlement could check the inevitable movement out of the region.

4. Costly Service Provision

> It is unthinkable that we will even be able to afford to provide the necessary medical services, and road services, and municipal services, and all the other needs of material civilization, to so large a number of settlements... (Government of Newfoundland and Labrador, 1969, 26).

The Budget Speech envisaged a future settlement pattern conducive to the provision of such services. This system would comprise two groups of settlements. One group consisting of about 36 places would contain about 500,000 people, while a second group numbering about 200 would have not less than 1,000 people each.

C. Objectives

The Royal Commission on the Economic State and Prospects of Newfoundland Labrador considered the resettlement scheme as one component of "an orderly transition of the traditional semi-subsistence way of life to a modern monetary economy" (Government of Newfoundland and Labrador, 1967, 34). This transition would involve the planned concentration of population while simultaneously reducing the number of small isolated communities.

Specifically this process has had two distinct, sometimes mutually exclusive, objectives as revealed by the policy statements and discussions in the preceding sections; increased accessibility to employment opportunities and increased accessibility to higher level goods and services. Differentiating between these two objectives affords the opportunity to interpret the spatial resettlement patterns, to be discussed later. The importance of the latter objective will be analyzed in terms of its necessity in a province with a potential in rural employment activities as well as urban job opportunities. It is sufficient to add at this point that this objective will probably remain a vital component in future resettlement programs, as is evident in recent statements by the new Minister of DREE:

> Proper shore services could be provided and, once again, the fishermen could still fish their traditional grounds. In this way the people concerned could have, in a sense, the best of both worlds - the opportunity to earn a living in the way they know best and access to the whole range of social services, good schooling, and the like (Jamieson, 1973, 18).

An important and related consideration which will be discussed in detail in Chapter VII is that the Resettlement Programs represent only one of many inter-related programs for economic and social development in the province. This aspect is often overlooked by those who criticized the Resettlement Programs, because they did not result in more employment or improved living conditions.

The programs represent an explicit policy of spatial reorganization aimed towards the redistribution and concentration of population in certain centres. They require augmentation by policies of complementary urban development, resource development, and infrastructure provision. The provincial government has suggested that the various programs since 1954 were designed to reflect the varying emphasis of other developmental programs. Canning has suggested that these objectives are "retrospective raisons d'être" (Canning, 1971, 5). Nevertheless, the former Deputy Minister directly responsible for the planning, administration, and control of the programs summarized in a recent paper the varying objectives through time:

> In the earliest phases, prior to 1966, when there was generally some open capacity to receive people, a laissez-faire policy was followed with respect to the destination. All the controls were focused on a 100% or 90% petition basis at origin, and generally there was transfer between inshore fishing communities.
>
> In the third phase, 1966, some emphasis emerged on other destinations, with encouragement to move to fisheries growth centres, i.e. from inshore to offshore communities.
>
> In the fourth phase, 1967, it was recognized that the fisheries could not absorb all the surplus inshore labour that had been piling up, and therefore, assistance was also granted to people to move to jobs in other industries in other growth centres.
>
> In the fifth phase, 1970, this emphasis on destinations is increased further in the attraction to special areas and other receiving communities (Sametz, 1971, 15).

The response by the rural population to those changes in terms of resettlement trends and their implications will be considered during the spatial analysis.

D. Summary

There have been three household resettlement programs since 1954; the Centralization Program prior to 1966, the first Federal-Provincial or Fisheries Household Resettlement Program during 1966-1970, and the Second Federal-Provincial Program since 1970. Various phases reflecting changes in governmental emphasis and control were evident. There was a trend away from a push or "laissez-faire" policy towards an active or pull policy. Householders were encouraged to resettle, for example, in fishery growth centres, other designated centres, and later DREE Special Areas. This represented an attempt to achieve a population distribution conducive to viable fishing operations and concentrated infrastructure provision. Various reasons were offered in retrospect to justify these programs including the problems of over-population, an obsolete population distribution, and providing public services. Finally, the objective of the Programs can be summarized as the achievement of increased accessibility to goods and services.

CHAPTER III

GROWTH CENTRES IN NEWFOUNDLAND: THEORY AND POLICY

Malcolm Moseley in a recent review of the growth centre idea concluded by stating, "We are still far from a universally acceptable definition of the growth centre concept, and even further from a generally applicable identification procedure" (Moseley, 1972, 9). Despite these limitations or perhaps because of them, there remains a continuous proliferation of growth centre literature as evidenced by Storey's (1973) bibliography.

It is the contention, however, of this thesis that the strength of the concept rests with its applicability to different regions, their particular needs and stages of development. The province of Newfoundland is a sparsely-populated rural problem region which is experiencing a process of population and resettlement pattern reorganization. Insofar as this is planned development it is designed to alleviate problems of rural marginality and increase accessibility to urban centre goods and services. Accordingly, the next two chapters examine a growth centre strategy which is applicable for the region's development in general, and in particular, complements the resettlement process. Divided into three sections: theory,

policy (Chapter III), and identification (Chapter IV), the discussion considers selected aspects of the growth centre idea deemed relevant for the region, reviews the policy application of the idea in the province during the study period, and finally in the absence of any existing methodology, identifies growth centres based on the preceding theoretical and policy aspects. This part of the thesis develops, therefore, the growth centre strategy aspect of Hermansen's theoretical framework.

A. Theory

Those key issues of the concept considered pertinent to the study region and the research theme include growth centre function, size and regional location. For the purpose of the ensuing discussion a growth centre is defined as an urban service centre with potential for expansion and investment opportunity based on existing structural characteristics and past growth performance. The suitability of this definition will be re-examined following the analysis of the resettlement patterns.

1. Function

There are basically two views on the nature of the growth centre concept; firstly, that it developed as the spatial component of Perroux's (1955) growth pole theory, and secondly, that growth centres are completely distinct

from poles and comprise geographical concentrations of economic and social activity similar to growing central places and nodal regions.[1]

The growth pole philosophy represents one aspect of the 'unbalanced growth' doctrine. Basically this theory, developed by Hirschman (1958) amongst others, advocates the concentration of investments in a few key sectors or industries. It is argued that such an investment strategy facilitates the attainment of faster and sustained economic growth via the development of large secondary manufacturing units which may derive further growth potential from scale and agglomeration economies and give rise to increased inter-industry linkages and significant multiplier effects.

The elements which comprise poles may or may not be spatially proximate. Where there is a spatial agglomeration of activities, a "unit or ensemble of economic technical units" (Davin, 1964) exists, including among other properties, a key propulsive industry which is characterized by large size and a tendency to dominate and maintain a high degree of interaction with other industries or firms. (Darwent, 1969, 6). Growth poles in this spatial context can be considered a particular form of growth centre.

---

[1]The term 'pole' is often used interchangeably with centre adding unnecessary confusion to an already ambiguous concept. Similarly the term 'point' is assumed synonymous with centre.

Boudeville, who initially attempted to place Perroux's poles within a geographic space framework, described their location as "towns possessing a complex of propulsive industries" (Boudeville, 1966, 112). However, growth centres may or may not contain poles. They may be urban locations with a wide diversity of functions and industries which as a group and in a particular spatial context may have grown rapidly and have the potential to grow, that is, growth centres need have no key or propulsive industry. This is in keeping with the comment by Darwent that, "One of the most valuable aspects of the idea of the growth centre is that it gets away from the reliance on the big firm or big industry as a basis for growth" (Darwent, 1969, 21). In the manufacturing sector, investment in small-scale simplified industrial complexes of the industrial estate type might prove feasible if based on local and regional markets, few linkage requirements, and small-medium sized firms not requiring a large key firm or industry (Darragh, 1970, 22).

While some growth centres of the pole type could function in an insular rural problem region, such as an industrial petroleum based complex where transshipment facilities exist (Wells, 1969), it is necessary to broaden the base of regional growth centres to include other economic sectors. Resource processing centres corresponding to manufacturing centres in the secondary sector, foot-loose

industries utilizing amenities as a factor of location and transport nodes for transshipment purposes, may form the economic base of growth centres in such a peripheral region. Further examples of the strictly non-industrial heavy manufacturing approach include recreation based activities, (Harper, Schmudde, and Thomas, 1969) and airport related activities (Peeples, 1970).

The notion of growth centres existing without growth poles and with diversified functions outside the manufacturing sector is related to an alternate view of the relationship between poles and centres discussed in the literature. This view is based on the premise that growth centres are a regional phenomenon. Kuklinski comments:

> I think that it is useful to accept a distinction between national and regional scales in relation to growth poles and growth centres. The promotion of growth poles is a phenomenon of the national scale changing not only the structure of a given region where the pole is located, but also the inter-regional proportions and economic activities in a given country. The promotion of growth centre policies is a phenomenon of the regional scale, transforming the pattern of urban and rural settlements inside the different regions (Kuklinski, 1969, 3).

Misra developed a "system of growth foci" for India consisting of four levels: service centres at the local level, growth points at the sub-regional level, growth centres at the regional level, and growth poles at the national level (Misra, 1972, 158).

Friedmann's core region hierarchy similarly consisted of four levels: the local service centre, sub-regional centre, regional capital and national metropolis. The growth centre (point) according to Friedmann is an urban centre "a local service centre equivalent to a core region (growth pole) of the fourth rank" (Friedmann, 1966, XV).

The suggestions by Kuklinski that a regional growth centre strategy functions to transform the existing settlement pattern and Friedmann that service centres are a form of regional growth centre, introduce non-economic variables important to the research theme. Darwent notes:

> Attempts have also been made to generalize the notion of the centre into the socio-cultural and political fields. While these attempts have not yet produced results, their existence is encouraging as representative of the awareness now common that explanations of and prescriptions for growth and development in spatial terms must cover non-economic variables if they are to claim success (Darwent, 1969, 21).

Hansen, on this theme remarks in reviewing growth centre policy in the United States that, "even though the designation of growth centres has little economic basis in many cases, it may well have political and moral values" (Hansen, 1972, 272).

In addition, social-service orientation might outweigh any purely economic criteria initially. The concentration of population facilitating accessibility to goods and services is an important consideration in a rural problem region with its economic base still rooted in

natural resource development. Employment opportunities may or may not be present in reception growth centres initially but the grouping of people for social development may be important. Friedmann considers social development as innovation accomplished mainly by increased communications (Friedmann, 1968, 364). Better communications in turn, he argues, are accomplished partially by population concentration. Growth centres, therefore, might function as Friedmann's social development poles, being "areas of concentrated population settlement - most often, but not necessarily cities - that have demonstrated high capacity for inducing social development" (Friedmann, 1968, 368). Friedmann has recognized the importance of social development in explaining migration patterns to growth centres of this type.

> Possibilities for social development do not necessarily show a perfect correlation with industrialization, in fact, certain kinds of industrialization will have very little positive social impact. In the principal growth centers, for instance, the objective conditions for social development may be more favourable, on the whole, than for economic progress narrowly conceived, though both variables would show higher indices than for other less dynamic areas. This fact might go far towards explaining why migration to cities and core regions is often in excess of economic opportunities, ... migration may have to be explained as much in terms of access to social as to economic opportunity (Friedmann, 1968, 368).

Similar to Friedmann's "social development poles", Misra, in proposing rural social growth centres for India, notes that they would not be growth centres in

the growth pole sense, but, "more appropriately will be a focal point for social intercourse where the exchange of ideas will take place and from where development influences will spread over to the villages and hamlets" (Misra, 1972, 158).

For a rural sparsely populated problem region, Allen and Hermansen suggest that the principal purpose of growth centres is to function as service centres for extensive hinterlands (Allen and Hermansen, 1968, 21). Since these are the "large" settlements in such a region and have more infrastructure facilities and act as focal points for the surrounding areas in terms of service provision, they are the "natural growth centres" since new investments and job opportunities most likely will develop there (Allen and Hermansen, 1968, 50).

It is necessary, at this point, to distinguish between "passive" and "active" growth centre policies. The former a 'laissez-faire' type policy, bases the selection of growth centres on past performance and existing size characteristics, the latter seeks to control this pattern while initiating other factors in potential growth centres. The active policy considers therefore both natural and planned centres, the natural being those with demonstrated growth and the planned those which could not develop independently or spontaneously and requiring special governmental intervention (Allen and Hermansen, 1968, 69).

There is undoubtedly a close relationship between natural and planned centres to the extent that, "planned poles [centres] are usually composed of a system of natural poles. Two cases may exist: the programming of planned poles takes advantage of the structural and growth properties of existing natural poles, and secondly, the size of the natural poles can serve as a benchmark for the creation and development of planned poles" (Tolosa and Reiner, 1970, 449).

The notion of natural growth centres functioning as service centres, or at least identified as potential growth centres based on service centre status and growth performance, requires an examination of the relationship between central place theory and growth centre concept. Moseley (1972) questions which of the two words comprising growth centres is crucial to the concept. As he points out, some researchers including Fox (1966) and Carol (1966) emphasize central place tertiary activities whereas others including Kuehn and Bender (1969) consider growth in the pure economic sense the basis for identification of growth centres. Hermansen maintains that when central place and growth centres are considered together, an approach is possible to solve the problem of "how to direct the process of urbanization so as to achieve a spatial organization of a size and with a geographical distribution of urban centres that are conducive to further development" (Hermansen, 1972,

39).

There is, however, considerable debate on the exact relationship between the two. Richardson feels that:

> Conceptually growth points (centres) and central places are not identical. Central places are numerous and arranged in a hierarchy, whereas there will be very few growth points ... in some cases only one within a region. Polarization effects will be more intensive and more varied in character around a growth point than around a central place, where the flows consist mainly of commuting for shopping, leisure and other sources. The most striking contrast of all is that whereas the growth of a central place is sustained by its complementary region, the growth of the zone of influence is sustained by the growth point (Richardson, 1969, 109).[2]

Tolosa and Reiner consider the two closely related in that, "a growth pole must be analyzed in terms of a larger system of poles ... with economic growth, poles assume the character of economic geographer's central places. This further assumes an increasing relative participation by the poles in tertiary activities" (Tolosa and Reiner, 1970, 454).[3]

An important source of the difference between the two arguments is that while Richardson employs "the pole" characteristics of centres, Tolosa and Reiner consider the

---

[2]The distinction between commuting for work and for services is important when we consider later the spatial results of the Resettlement Programs in that the two objectives of resettlement, namely increased accessibility to jobs and accessibility to services are distinct.

[3]Poles should be interpreted as centres in this context.

tertiary sector as contributing to the economic base.[4]

However, Tolosa and Reiner do make one important distinction regarding the location of urban places and growth centres, namely, "the former is assumed given and unchangeable, while the latter can change on the planning horizon. An urban centre can function as a pole at time T and cease to be a pole at T + I (Tolosa and Reiner, 1970, 455). This point raises two vital related non-spatial issues, namely; whether a growth centre is a real entity or a condition of growth and secondly, the temporal aspect as indicated in Darwent's question, "Are we speaking of places or phenomena that have grown, that are growing, or are predicted to grow?" (Darwent, 1969, 5).

There are several implications of these related characteristics. First a central place is not necessarily an existing growth centre although it may share size, location, and other characteristics identifiable in growth centres. For example, a service centre's position in a hierarchy does not establish a priori its qualification as a growth centre. Past or possible growth characteristics

---

[4]It is interesting to compare the Tolosa and Reiner suggestion that poles (centres) develop into central places with that of Allen and Hermansen that centres will develop from central places (Allen and Hermansen, 1968, 50). This latter thinking is appropriate for rural problem regions while the former argument is based most likely on more developed highly populated regions which have undergone the normal primary - secondary - tertiary sequence of development.

also need to be established based on such facts as location, industrial structures, and natural resource location. On this question of hierarchical position several views have been offered. Maki has suggested that a growth centre typically is a fourth-order one (Maki, 1966, 660). Bylund maintains that growth centre policy for the forest counties of Sweden "is not limited to the higher levels of the central places hierarchy, it concerns also the lowest possible level" (Bylund, 1972, 122). Finally, Allen and Hermansen suggest that, "growth centre policy does not necessarily involve centres at any specific level in the hierarchy of centres but the strategy will be difficult to pursue at too low a level in the hierarchy" (Allen and Hermansen, 1968, 68).

Second, all growing places in terms of population and functional changes are similarly not growth centres. Small isolated communities with exceptionally high population and service function growth rates may reflect a time-lag phenomenon, for as Hansen notes:

> Marginal areas are also acquiring new service jobs, not because they are attracted to expanding services, but because ubiquitous elementary services have not yet been adequately distributed in these areas. This time lag between population growth and service equipment is one of the main reasons for the recent growth of a number of small service settlements all over the country side (C. Hansen, 1972, 7).

It is necessary to distinguish between growth contributing to the long term viability of a centre and such time-lag features since a situation of decline may result as the process of spatial concentration towards fewer and larger centres continues.

Finally a stagnant, small, or even a new town[5] may be a potential growth centre because of circumstances created by the decline of other centres, new transport links and evolving settlement pattern.

2. Size

Regarding the question of size of growth centres there appear to be no generally accepted criteria (Moseley, 1972, 5). Hermansen's suggestion that there is great need for more theoretical and empirical research on this issue (Hermansen, 1972, 51) can be appreciated when research results are considered: an example of this is found in Fox's comment, "They [growth centres] tend to be larger in regions where population is relatively dense, smaller where population is sparse" (Fox, 1966, ii).

While various optimum size categories have been suggested in the range of 250,000 - 750,000 (Hansen, 1972, 279) or even as low as 30,000 (Allen and Hermansen, 1968, 98), it is readily apparent that for a sparsely populated rural region

---

[5]The relationship between growth centre and new town policy is a major theme of research in this field (Hansen, 1972, viii).

different standards and criteria are needed. As appropriately noted,

> In the context of the sparsely populated and underdeveloped regions, large centres of say 100,000 are simply not possible, no matter how economically advantageous they may be, since to build up centres of such size would demand large-scale immigration or wholesale depopulation of large areas of the region (Allen and Hermansen, 1968, 97).

New criteria must be considered to determine minimum viable sizes. This requires case studies of individual regions. Moseley suggests "Perhaps the answer lies in the self-sustaining growth and 'urban size ratchet' concepts whereby the crossing of certain size thresholds makes more probable the subsequent establishment of new activities" (Moseley, 1972, 5). For instance, research in Sweden suggests that a service centre has a 95% probability of operational success with a population of 3,000 excluding the umland (Bylund, 1972, 237). In Norway, Hansen notes that new investments and jobs are seeking urban settlements in the range of 15,000 to 50,000 (C. Hansen, 1972, 12). While recognizing the view that "The question of the prospective economic status of a growth pole [centre] will hinge more on its degree of association with other centres than on its absolute size" (Nichols, 1969, 25), it is felt that the probability of development potential of a centre does require a certain minimum size. This point is examined in detail in Chapter IV.

Size and numbers of growth centres will accordingly be based on particular geographic, social and political factors as well as economic criteria. As Kuklinski notes:

> ... it is a dangerous mistake to reduce the problem of growth poles and growth centres to economic dimensions only... In most cases, the strictly economic arguments will favour the solution of selecting a small number of bigger growth poles and growth centres. The facts of political reality will press to adopt the opposite solution.... to multiply the number of places to be recognized. The solution of economic and social policies in this field will be, in most cases, a compromise of conflict, forces and arguments" (Kuklinski, 1968, 2).

There is obviously the danger, however, of a "welfare" orientation for a growth centre strategy resulting in a diffusion of growth foci throughout the region 'watering down' the desired effects. Parr suggests the nature of this problem:

> Once a government authority has decided to use growth poles (centres) as a means of expediting a given policy, there is the question of locating them. There are instances where planners have become 'carried away' by the notion and have marked poles on the map almost at random, or worse yet, in a manner which is appealing to the eye (Parr, 1964, 16).

The political influence is manifested in the proliferation of designated growth centres in Newfoundland. This point is discussed in detail in the Policy section of this Chapter.

3. Regional Location

There are three assumptions underlying the argument for the location of growth centres in the study region; the need to offset the problem of limited spread effects of natural growth centres, the need to complement the intra-provincial resettlement process; and finally the need to compromise between conditions of extreme dispersed and concentrated population distributions at the national scale.

The basic argument for a growth centre strategy, at any scale, is that the faster and sustained growth derived from concentrating developmental efforts in a few selected areas based on functional and geographical advantages will eventually spread into the surrounding area. As noted in Chapter I, there has been little, if any, evidence that such spread effects do occur. Based solely on growth pole criteria discussed earlier, only the national urban centres could function as economic growth centres of the pole type. The net results, therefore, of limited spread effects on peripheral regions, including Newfoundland, viewed at the national scale would be increased out-migration, increased primary resource exportation and costly, scarce, public services. Expressed in general terms the tendency is for centripetal polarization effects to dominate any centrifugal spread effects at this scale. The effects on the natural growth centres of such concentration processes would be continuing congestion to the point where any economies of

scale and other advantages would be lost. Parr outlines several objectives of a national growth pole strategy including "the stimulation of depressed areas, relieving congestion on crowded and increasingly inefficient metropolitan centres facilitating the migration to urban areas, and securing a balance in the development among regions in order to avoid political rifts and the emergence of economic dualism" (Parr, 1965, 638). Given the likelihood of limited impact of national poles on peripheral rural regions, the location of growth centres within the region is advocated.

Historical evidence of population concentration implies a continuing trend (Gibbs, 1963), despite recent indications of local dispersion. A strategy which guides this process is essential for the long term benefit of the region concerned and the nation. A relevant growth centre strategy could provide, therefore, a rationale for a resettlement scheme designed to redistribute population within a region consonant with urban and rural development. It has been suggested that for a sparsely populated rural problem region the deliberate restructuring of settlement patterns resulting in fewer and larger settlements is, "the most important contribution of a growth centre policy towards the development of these regions" (Allen and Hermansen, 1968, 49).

Finally, it is assumed that such a region does have a future with increased and redistributed population. It has been suggested by some academics that a form of migration towards national growth centres is the only solution to an over-population problem. This ironic situation of over-population in a sparsely populated region is related to the resource-base potential and apparent lack of employment opportunities within the region (Copes, 1972). The compromise, however, between conserving the present settlement distribution or promoting massive migration out of the region is one of local regional concentration. Such emigration from the region towards the larger national capitals contributes to the existing problem of urban congestion. The principle of "decentralized concentration" or local regional concentration offers the compromise between the problems of extreme rural marginality on the one hand and national urban congestion on the other.

Conclusion

The purpose of this section is to indicate the applicability of the growth centre idea for the study region in general, and in particular the role of a growth centre strategy to complement the process of spatial reorganization that is occurring. The idea that growth centres could function as locations for industrial growth poles has possible relevance for the study region, particularly of the

industrial complex type based on petroleum refinery sites where transshipment facilities are sufficient and comparative advantages may exist.

However, distinct from this type of growth centre and also the secondary manufacturing type without the key or dominant leading industry, is the notion of present growing service centres acting as the focus for future developmental efforts. This idea is particularly relevant considering the importance of the natural resource primary sector. Centres to service the rural hinterland more effectively are required. Also a system of such centres functions to direct the population redistribution process which is taking place through the Newfoundland Resettlement Programs. The social-service function of the growth centre strategy needs to be advanced, therefore, for the study region. Partially because of this service orientation and because of the present dispersed distribution such growth centres will be smaller in size and greater in number than is normally considered desirable in traditional urban manufacturing growth centre planning.

This type of growth centre strategy relates directly to the "decentralized concentration" principle, emphasizes internal rather than external migration and finally does not rely solely on spread effects from national growth centres.

B. Policy

Advocates for some form of growth centre strategy for the province have included various individual researchers, associations, and political figures. The Royal Commission on the Economic State and Prospects of Newfoundland and Labrador suggested:

> Programs should aim to ensure a consolidation of capital stock and a higher concentration of future public and private funds in a relatively few towns with good development prospects (Government of Newfoundland and Labrador, 1967, 33).

Grose, in his review of the manufacturing opportunities for the province, noted:

> As far as possible, new manufacturing activity should be encouraged to concentrate in a few selected areas in the province. Small industrial estates should be established at a limited number of designated growth points in the province and in locations where centralized services have been developed to meet needs in other sectors (Grose, 1971, 27).

The Atlantic Development Council suggested that the settlement pattern, particularly the urbanization of the Atlantic Region, should consist of three types of population concentrations:

(1) The Growth Centre. This consists of the large metropolitan area containing a core of manufacturing industries, together with a well developed array of service industries, supplying both businesses and community services.

(2) The Resource Centre. This is the community type in the resource sector similar to the industrial growth centre in the secondary sector.

(3) The Service Centre. Remote from growth and resource centres, it would be designed primarily to serve the local area. These special service centres, mainly in Newfoundland, should be strategically located (Atlantic Development Council, 1971, 40).

The minister formerly responsible for provincial administration of the Newfoundland Resettlement Programs noted:

> A major requirement, if we are to be able to expand the scope of the program successfully is first, to provide more intensive counselling and assistance to resettlers in respect to their decision; and second, to facilitate their integration into the reception communities. This will entail a complementary growth centre development program for the provision of the necessary associated infrastructure facilities (Rowe, 1969, 24).

The first official application of a growth centre program was the designation of fishery and other urban growth points in 1967 to complement the rationalization of the fishing industry and accompanying resettlement programming. The criteria and location of these centres were discussed in Chapter II, dealing with the history and objectives of resettlement.

Present growth centre strategy in Newfoundland developed from federal legislation which established the

Department of Regional Economic Expansion (DREE). DREE, in consultation with the respective provincial governments, designated twenty-two Special Areas across Canada in 1970. Another Bill, C-202, the Regional Development Incentives Act, was designed to provide financial inducements to new or expanding manufacturing or processing operations, excluding initial processing in a resource-based industry. All Atlantic provinces, except the Labrador section, are designated Incentive Region A.

Designated Regions

Industrial incentives are available in regions meeting three basic requirements: where whole or portion of a province is not less than 5,000 square miles; existing opportunities for productive employment are inadequate; and where such incentives can meet the need for economic expansion and social adjustment (Office Consolidation of the Regional Development Incentives Act, 1971, 4-5). The emphasis is upon concentration of investment in those urban centres of Designated Regions with existing or potentially high growth rates.

Special Areas

Where infrastructure and public services and facilities are deficient, such urban centres are eligible for special assistance. Accordingly, Special Areas were selected as, "the vehicle for providing the infrastructure

thought necessary for economic development" (Atlantic Provinces Economic Council, 1971, 29).[6]

A recent DREE publication explaining the concept of the Special Area as employed in Federal Regional Development Policy stated:

> A Special Area may, therefore, be defined as one where special action is needed to promote economic expansion and social adjustment because employment opportunities are exceptionally inadequate within the area itself, or in the larger region of which the area constitutes (or has the capacity to develop into) the major activity centre (Francis and Pillai, 1972, 55).

The growth centres are, "the major urban centres of the region where the Special Areas and Designated Regions programs are to come together to form a sustained and coherent stimulus to non-resource based industrial development" (Atlantic Provinces Economic Council, 1971, 45).

By definition, "Typically, the growth centre should be a large metropolitan area ... containing a population of 100,000 (Atlantic Development Council, 1971, 39), and be one of "those centres with the greatest advantage for

---

[6]That Social Overhead Capital (SOC), of which infrastructure is a part, should precede Direct Productive Activities (DPA), including industrial incentive grants, is apparently advocated by DREE. Hirschman, amongst others, maintains development via SOC shortage instead of initial excess. This argument is possibly based on the premise that the key bottleneck to economic development is lack of decision makers not SOC restrictions (Hirschman, 1958, 83). The Atlantic Provinces Economic Council is of a similar persuasion suggesting that DPA investments induce SOC expenditure while, "heavy outlays on infrastructure are not likely by themselves to lead to private investment" (Atlantic Provinces Economic Council, 1971, 87).

secondary and tertiary industries" (Department of Regional Economic Expansion, 1971, i). It can be seen that these and other criteria including large size and degree of industrial concentration (Atlantic Provinces Economic Council, 1971, 26), indicate that DREE's approach in identifying growth centres is 'passive' and follows certain traditional growth pole aspects. They are safe decisions since they are, "the ones that most people familiar with the region and political realities would have selected" (Atlantic Provinces Economic Council, 1971, 88). Based on such criteria, only St. John's appeared eligible for growth centre designation. Therefore, by implication all Special Areas are not necessarily growth centres (Atlantic Provinces Economic Council, 1971, 87).

The ambiguity of the conceptual basis of the growth centre notion noted earlier is also reflected in such policy application. This is somewhat understandable considering the political uncertainties such a policy entails particularly in a federal state burdened by centrifugal forces of large size and economic regional disparity. It should be noted, however, that the explicit advocacy of the strategy is also generally lacking in other countries implementing aspects of the concept. European Free Trade Association countries such as Norway and Britain provide such examples (Allen and Hermansen, 1968, 110). The Atlantic Provinces Economic Council, in its sixth Annual

Review devoted entirely to the growth centre concept, noted that ten years since it recommended the concept, a definite growth centre policy has not yet been specified even though the concept is "central to DREE's entire development strategy" (Atlantic Provinces Economic Council, 1971, 45). That DREE has recognized this aspect is reflected in the Department's publication cited earlier:

> Therefore, 'the Special Area' concept, although it draws in part on the 'growth point' idea, does not imply that the areas themselves are all growth points in the conventional sense with clearly delineated 'growth areas' (Francis and Pillai, 1972, 63).

Seven of the province's eight Special Areas are located on the island and hence also within a Designated Region (Figure 3.1). There are six types of Special Areas in Canada of which Newfoundland has three (Table 3.1).

DREE justified the latter six resettlement Special Areas primarily on the basis of its Social Adjustment and Rural Development Program which is described as providing

> essential infrastructure facilities and developing new employment opportunities in relatively more diversified activities so as to enable the areas to serve as centres to accommodate, economically and socially, the people from the isolated and sparsely populated outports (Francis and Pillai, 1972, 69).

Two other types concerned with the development of resource-based industries and initial processing operations

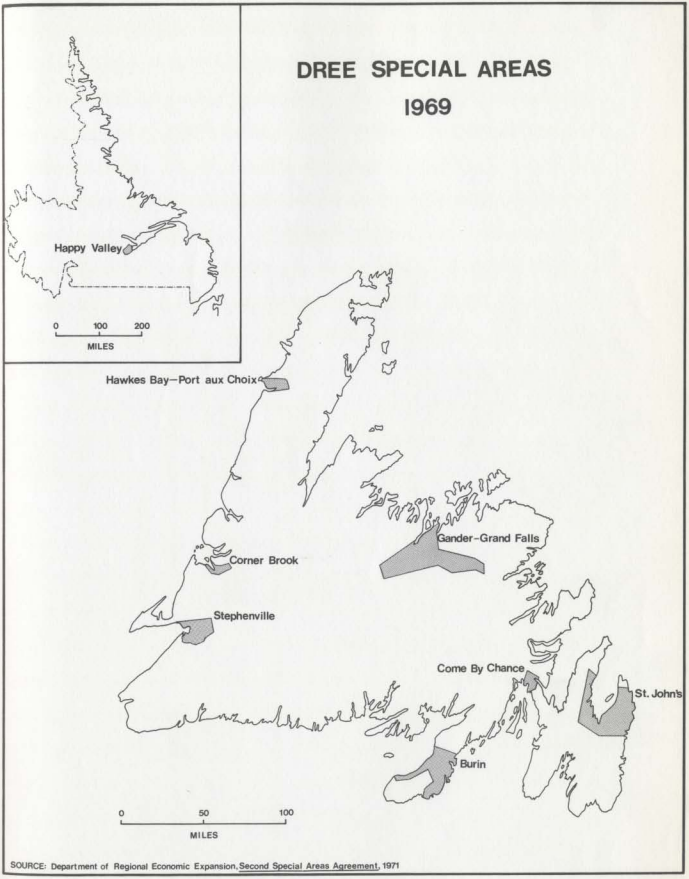

DREE SPECIAL AREAS
1969
Happy Valley
0 100 200
MILES
Hawkes Bay—Port aux Choix
Gander-Grand Falls
Corner Brook
Stephenville
Come By Chance
St. John's
Burin
0 50 100
MILES
SOURCE: Department of Regional Economic Expansion, Second Special Areas Agreement, 1971

Figure 3.1

TABLE 3.1

TYPES OF SPECIAL AREAS IN NEWFOUNDLAND

Type	Description	Location
Growth Centre	Existing large urban centres	(1) St. John's
Special Potential	Growth potential based on locational advantages and resource endowment	(2) Corner Brook
Resettlement Areas	Reception areas of past intra-provincial migration with the possibility of better services and facilities	(3) Burin (4) Come By Chance (5) Grand Falls-Gander (6) Stephenville (7) Hawkes Bay (8) Happy Valley

Source: Atlantic Provinces Economic Council, 1971, 26.

were not designated in the province apparently because of the provision of other federal and provincial programs. It is readily apparent, though, that some of the resettlement type Special Areas are, in fact, those with natural resource potential and initial processing operations, specifically the fishery growth centres specified under a previous Resettlement Program. The background description of the Newfoundland Special Areas in the Second Federal-Provincial Agreement on Special Areas emphasizes the natural resource processing potential requiring infrastructure assistance. The social service orientation implied in the selection of these Special Areas is to suggest a similar orientation of general DREE policy as long as the selection is conducive to "economic viability and potential industrialization" (Rowe, 1970, 8).

This social aspect is further indicated by the proliferation of Special Areas in the province in relation to the population base. The Federal Minister responsible for DREE has maintained that too many Special Areas will cause the program to "become meaningless". However, declared provincial government efforts, "to soften the rigours of DREE as far as Newfoundland is concerned" and the ability to persuade DREE of "our unique circumstances and that many such Special Areas are needed here" (Rowe, 1970, 7), indicate a definite political influence on growth centre theory when applied in a rural problem region.

The difficulty in considering the DREE Special Area strategy in terms of the growth centre concept seems to stem from three sources of confusion. First, while the growth centre idea is a spatial manifestation of the unbalanced growth doctrine, the distribution and proliferation of Special Areas at the national and the provincial scale, particularly Newfoundland's case, appears to adhere to a balanced type of strategy. In effect, however, the DREE strategy represents an application of the principle of decentralized concentration. Each region in a large federal state contains growth centres for local regional planning to counteract the over concentration of people, and development effort in a few national centres.

Second, the assumption that the Special Areas are locations of present and potential economic growth, is subject to question. Brewis, a DREE critic, noted:

> I think the term the government rightly prefers to use is a Special Area because some of the centres which are not going to grow are called growth areas. I think, to think of them as growth centres is quite misleading. If you look at Newfoundland, it is not all going to be growth centres (House of Commons, 1970, 3:88, 15/12/70).

The importance of social consideration similar for Friedmann's "social development poles" was a strong consideration in the designation of Special Areas, other than those explicitly called growth centres.

Finally, the size and shape of the Special Areas differ from that often associated with a growth centre as

a point. They have developed as "relatively small geographical areas centred around a concentration of population - in some cases, a village and in other cases, an urban metropolis" (Atlantic Provinces Economic Council, 1971, 18). The importance of the idea of area, notably similar to a nodal region, is an important aspect of this thesis, when interpreting resettlement trends. While this idea will be examined in detail later, it is sufficient to conclude by noting that, spatially, the Special Areas are somewhat similar to those advocated by the Appalachian Regional Commission in the United States:

> By a 'growth center' or 'centers' is meant a complex consisting of one or more communities or places which taken together provide or are likely to provide a range of cultural, social, employment, trade and service functions, for itself and its associated rural hinterland.... A 'growth area' is an extension of the growth center itself. It is the adjoining area likely to experience residential and employment growth because of proximity to a center or location between centers" (Hansen, 1972, 269).

Finally, it may be noted that the DREE Special Areas strategy represents a diluted application of the traditional growth centre concept. The proliferation of Special Areas in the study region, the social adjustment orientation in the selection of the Areas, and a reluctance of government to state explicitly that it adheres to the concept, represent modified political action. Nevertheless, there is concern shown for some form of polarization within the region. Concentration of infrastructure investment and

attempts to direct resettled householders into the Special Areas signify an acceptance, at least, of the decentralized concentration principle, which as noted in Chapter I, is the underlying principle of the growth centre idea.

CHAPTER IV

GROWTH CENTRES IN NEWFOUNDLAND: IDENTIFICATION

The identification of growth centres is an integral part of regional analysis deemed necessary for planning and administration. Since a regional "decentralized concentration" strategy assumes a knowledge of those places illustrating potential growth characteristics, the selection of appropriate identification criteria is vitally important. The view expressed in Chapter III that the characteristics and functions of growth centres vary according to the region re-emphasizes Moseley's comment that there is no generally applicable growth centre identification procedure (Moseley, 1972, 9). It was argued also that in a rural, sparsely populated region experiencing population concentration, potential growth centres most likely could be developed from the present growing service centres.

Accordingly, an examination of the past growth performance and centrality of service centres is required to identify the natural growth centres. A methodology is developed for two reasons: the absence of any readily available methodology for those types of growth centres in

the region and secondly to ascertain if resettled householders are moving to growing centres and areas providing goods and services.

Several indicators considered relevant to the objective of the research have been selected and grouped into three categories: Structure, Flow, and Growth.[1]

Category	Indicators
A. Structure	1. Initial Settlement Size
	2. Settlement Service Function
B. Flow	1. Retail Sales per Capita
	2. Telecommunications System
C. Growth	1. Settlement Population Increase
	2. Business Telephone Increase

The method of analysis involves ranking centres on a scale of 1 to 5 (low to high performance) for each indicator. Finally, using a simple additive approach, the total points (maximum 30 points) are summed for those centres which had positive performance in all six indicators.

The sometimes arbitrary method of selecting and weighting the indicators is typical of most growth centre

---

[1]Hodge in a research proposal for the Canadian Council on Urban and Regional Research grouped several system variables into Behaviour, Flow and Structure (Hodge, 1969).

identification studies, as Moseley notes in his review:

> But the truly ad hoc nature of these procedures derived only partially from their uniqueness. It is derived also from the nature of the technique employed. The initial selection of 'relevant' variables and their expression (e.g. growth rates or absolute increments), the selection of significant components and their identification, the designation of 'high' scores on these components - all were to some extent arbitrary decisions ... It is clear that what came out depended very much upon what went in! (Moseley, 1972, 8).

This limitation and others of the technique are discussed further in the critique following the identification exercise.

A. STRUCTURE

1. Initial Settlement Population Size

The issue of settlement population size in growth centre planning was discussed earlier. The importance of initial size as an indicator of stability and growth probability has been recognized in urban research. Northam isolated population size and relative location in explaining settlement growth rates in the United States for the period 1940-1960 (Northam, 1969). Borchert noticed "that there is some tendency for population growth of a place to be directly related to its size, and hence to its previous growth" (Borchert, 1963, 19).

The following table of growth performance of various size categories in the province for the period 1961-1971 can

be interpreted as a population growth probability indicator.

TABLE 4.1

SETTLEMENT GROWTH PROBABILITY

Initial Size 1961	Number of Centres	Percentage of Centres Growing	Declining
< 500	880	56.3	43.7
500-999	130	66.7	33.3
1000-1999	41	87.5	12.5
2000-4999	16	93.7	6.3
5000-9999	5	80.0	20.0
>10,000	2	100.0	0

Source: Calculated from Statistics Canada Census, 1961 and 1971.

As expected, the probability of growth tends to increase with the increasing initial size. In the study area, the high degree of certainty extends down to approximately the 1,000 population level. Better performance of the 5,000-9,999 group would be expected from this trend. However, the size group's showing can be explained by the lack of economic diversification. The problem of one industry and primary natural resource towns of fairly large size is exemplified by Wabana (8,026) which depended completely upon iron ore exploitation. Technological

and economic developments in the industry combined with new supply areas diminished the need for the type of ore mined in the area (Day and Pearson, 1967). The lack of economic diversification is revealed also in the case of Stephenville (6,043) which until recently, depended primarily on the now defunct Harmon United States Air Force Base.

The need to consider such factors as initial size and service function as well as past rapid growth patterns has been suggested by several researchers as there could be a tendency to regard all rapidly growing centres as potential growth centres.

Two observations on the relationship between size and sustained growth potential in the Scandinavian experience appear relevant for this province, considering the similar dispersed nature of the rural population.

> Most local centres pass through a period of relatively rapid growth which is then usually displaced by stagnation and even decline" (Hermansen, 1968, 191).

There is evidence towards this trend in the province. Table 4.2 indicates the growth performance of the various settlement size categories during the periods 1951-1961, and 1961-1971.

During 1951-1961 all categories except the 1,000 - 1,999 group were above the provincial average of 26.7%. However, the two smallest groups were below the provincial average of 14.1% during 1961-1971. While the provincial

TABLE 4.2

POPULATION GROWTH RATES

Centre Size at Start of Period	Percentage Change 1951-1961	1961-1971
< 1,000	34.7	8.7
1,000-1,999	25.1	12.5
2,000-4,999	27.9	22.5
5,000-9,999	27.0	10.5
> 10,000	33.0	28.8
Province	26.7	14.1

Source: Statistics Canada, Census 1951, 1961, 1971.

growth rate had decreased by approximately 50%, the smallest group's rate had declined approximately 75%. The performance of the 5,000-9,999 group has been accounted for previously.

Hansen attributes the ephemeral growth of small centres in Norway to a time lag effect between population growth and service acquisition and the local concentrations of certain public services such as schools and post offices. He suggests that the presence of such ubiquitous services offers no guarantee of a centre's future growth potential (Hansen, 1972, 7).

The implication of these phenomena for resettlement and growth centre planning is that such growth characteristics may be deceptive when not considered with structural features

such as initial size. Subsequent movement out of the "intermediate" centres, which has occurred under the Resettlement Programs, is evidence of problems in the proper selection of such centres.

The importance of initial size is taken into account as Indicator 1. Those centres which had reached the 1,000 level by 1971 have been selected, and their populations and the scaling system shown in Table 4.7.

Since the final list of identified growth centres will consist of only those centres performing positively in all six variables; because of the importance discussed earlier of certain minimum size, and, finally, because of the unavailability of data for many small, rural centres, only the centres used in Indicator 1 will be eligible for further consideration.

2. Settlement Service Function

The view has been expressed several times that service centres could be potential growth centres and also function as special rural growth centres of the 'social development' type. In order to identify those centres and later analyze the proportion of resettlement terminating in the higher ranking centres, a service centre hierarchy was developed. For this purpose a modification of a Trade Centre classification constructed for the Atlantic Provinces region (Atlantic Development Board, 1969, 43) was used, which in

turn had been modified from one developed for the upper mid-west region of the United States (Borchert and Adams, 1963). This scheme is summarized in Figure 4.1.

The Trade and Business Directory of Newfoundland for the years 1961 and 1971, in addition to information obtained concerning the location of hospitals, physicians and regional high schools was used for the classification system resulting in a service, rather than simple trade centre type hierarchy. The frequency of occurrence of the various functions indicated in Figure 4.2 was tabulated for a sample of 312 centres. This sample consisted of all reception centres under the Resettlement Programs for the period 1965-1972. It includes all centres of greater than 1,000 population in 1971 except Benoits Cove, Churchill Falls, Pouch Cove, Spaniards Bay, Upper Island Cove, and Wabana, which received no households. Table 4.3 and Figure 4.3 indicate the structure of the sampled source hierarchy, its census division distribution and changes occurring during the ten year period 1961-1971.

As expected, when comparing Figure 4.3 and Figure 1.2, the distribution of higher ranking centres, i.e. Full Convenience and Higher, coincides generally with the distribution of total and urban population.

Regarding the changes, of particular interest is the increase in the proportion of Full Convenience and the decrease absolutely and relatively of Hamlets. These

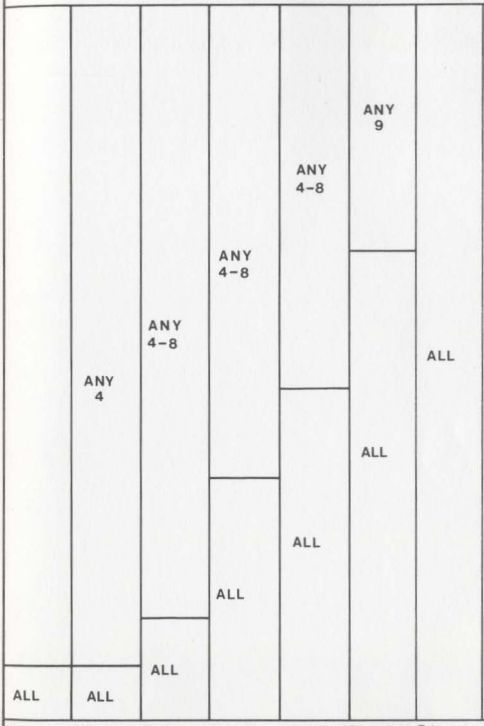
ATLANTIC DEVELOPMENT BOARD
TRADE CENTRE CLASSIFICATION SCHEME

Hamlet	Minimum Convenience	Full Convenience	Partial Shopping	Complete Shopping	Secondary Wholesale Retail	Primary Wholesale Retail	SELECTED BUSINESS FUNCTIONS
					ANY 10–13		Automotive Supplies Bulk Oil Chemicals, Paint Dry Goods, Apparel Electrical Goods Groceries Hardware Industrial, Farm Machinery Plumbing, Heating Professional, Service Equip. Paper Tobacco, Beer Drugs Lumber, Construction
			ANY 4–8	ANY 9 or more		ALL	Antiques Camera Store Children's Wear Florist Music Store Photo Studio Paint, Glass, Wallpaper Plumbing, Heating Supplies Radio, TV Store Stationery Tires, Batteries, Accessories Women's Accessories
		ANY 4			ALL		Family Shoe Store Farm-Garden Supplies Lumber, Bldg. Materials Motel-Hotel Jewellery Mortuary
	ANY 4		ALL	ALL			Appliances or Furniture Laundry Men's, Boy's or Women's Clothing
		ALL					Garage, Auto Dealer Variety Store Meat, Fish, Fruit General Merchandise Bank Hardware Eating Place
ALL	ALL						Gasoline Service Station Grocery

SOURCE: Atlantic Development Board, Urban Centres in the Atlantic Provinces, 1969, Figure 3-1

Figure 4.1

NEWFOUNDLAND SERVICE CENTRE CLASSIFICATION SCHEME



SOURCE: Trade & Business Directory of Newfoundland, 1961 & 1971
Government of Newfoundland, Information supplied regarding location of hospitals, physicians, and regional high schools

Figure 4.2

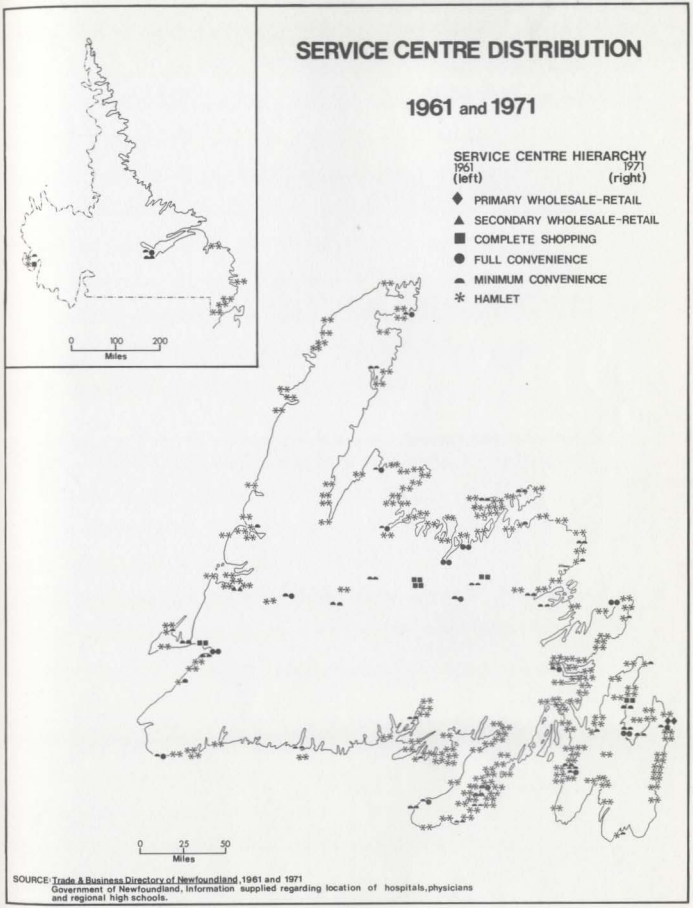
TABLE 4.3

SERVICE CENTRE DISTRIBUTION, 1961 AND 1971

Province	Type of Centre					
	Primary Wh-Retail	Secondary Wh-Retail	Complete Shopping	Full Convenience	Minimum Convenience	Hamlet
Province						
1961 No. of Centres	1	1	5	5	35	265
1971 No. of Centres	1	1	6	17	35	252
Percent Change	0	0	+20.0	+240.0	0	-4.9
Census Division 1						
1961 No. of Centres	1	0	1	1	7	64
1971 No. of Centres	1	0	1	3	8	61
Percent Change	0	0	0	+200.0	+14.3	-4.6
Census Division 2						
1961 No. of Centres	0	0	0	0	5	31
1971 No. of Centres	0	0	0	2	4	30
Percent Change	0	0	0	+200.0	-20.0	-3.2
Census Division 3						
1961 No. of Centres	0	0	0	0	3	27
1971 No. of Centres	0	0	0	1	3	26
Percent Change	0	0	0	+100.0	0	-3.7
Census Division 4						
1961 No. of Centres	0	0	1	1	2	11
1971 No. of Centres	0	0	1	1	4	9
Percent Change	0	0	0	0	+100.0	-18.1

TABLE 4.3 (Continued)

	Type of Centre					
	Primary Wh-Retail	Secondary Wh-Retail	Complete Shopping	Full Convenience	Minimum Convenience	Hamlet
Census Division 5						
1961 No. of Centres	0	1	0	0	1	8
1971 No. of Centres	0	1	0	1	0	8
Percent Change	0	0	0	+100.0	-100.0	0
Census Division 6						
1961 No. of Centres	0	0	3	1	6	6
1971 No. of Centres	0	0	3	2	5	6
Percent Change	0	0	0	+100.0	-16.6	0
Census Division 7						
1961 No. of Centres	0	0	0	1	3	33
1971 No. of Centres	0	0	0	2	4	31
Percent Change	0	0	0	+100.0	+33.3	-6.0
Census Division 8						
1961 No. of Centres	0	0	0	1	4	53
1971 No. of Centres	0	0	0	3	3	52
Percent Change	0	0	0	+200.0	-25.0	-1.8
Census Division 9						
1961 No. of Centres	0	0	0	0	2	25
1971 No. of Centres	0	0	0	1	2	24
Percent Change	0	0	0	+100.0	0	-4.0
Census Division 10						
1961 No. of Centres	0	0	0	0	2	7
1971 No. of Centres	0	0	1	1	2	5
Percent Change	0	0	+100.0	+100.0	0	-28.5



SOURCE: Trade & Business Directory of Newfoundland, 1961 and 1971
Government of Newfoundland, information supplied regarding location of hospitals, physicians and regional high schools.

Figure 4.3

changes occurred upwards in the hierarchy since no settlement sampled lost position or disappeared. Since this sample was based on the reception centres, it would not be expected that those centres would decline. The disappearance of small-size hamlets, that is those of less than 500, is, of course, taking place, as evidenced by the decline in the total number of settlements in the province (Table 1.2).

For the purpose of growth centre identification, Full Convenience centres were selected as the minimum or threshold level of the service centre hierarchy and constituted Indicator 2 (Table 4.8).

B. FLOW

1. Retail Sales per Capita Index

The hierarchical position of a service centre implies certain hinterland influences on shopping and journey-to-work. The functional aspect of areal extent can be measured with flow data. Because of the unavailability of flow data for the entire province, it is proposed to utilize other available data of a structural nature. This is justifiable because of the circularly causal relationship existing between flow and structure; flow being movement of consumers which influences and is being influenced by structure, namely the system of service centres. Accordingly, a retail sales per capita index can be interpreted as a function of flow and, when manipulated, gives an indication

ofa centre's influence beyond its boundary limits.

Retail trade statistics for 1966 are developed according to the location quotient principle.[2] The average per capita retail trade expenditure in the province for 1966 was $822.07, varying from a low of $439.61 in division 9 to $1,222.56 in division 5. A uniform consumption per capita pattern is assumed at the provincial level and at each census division level, therefore, the index for each is 1.00, e.g.

Province - $ 822.07 = 1.00

Division 5 - $ 1,222.56 = 1.00

Centres which have higher retail trade per capita expenditure than the provincial and/or respective census division levels are considered to be serving consumers beyond the centre's boundaries. That is, in location quotient terms they are greater than 1.00 and are exporting.

Indicator 3 is the Retail Sales per capita Index. Communities with indices greater than 1.00 for the province and/or the census division are listed in Table 4.9. Where a centre has an L.Q. of greater than 1.00 for the census division and of less than 1.00 for the province it is included since it represents local area importance.

---

[2]See Isard, 1960, 123 for a discussion of the location quotient principle.

2. Telecommunications System

An indicator of the centrality of a settlement and relative location with respect to regional and extra-regional communications is its rank in a telephone system hierarchy. The importance of accessibility in the identification of growth centres has been recognized by several writers including Fox (1966, ii) and Allan and Hermansen (1968, 65), particularly with reference to the growth centre's role as the node for local and regional-national communications.

The works of Boudeville (1966), Greene (1953; 1955), and Schroeder (1958), employing telephone call data to determine polarised regions, hinterlands and urban hierarchies, are relevant in growth centre identification.

Christaller was the first to employ the telephone as an index in geographical research in 1933 (Green, 1953, 1). He used the number of telephones per capita as a measure of the degree of centrality for a settlement. Ullman in 1941 suggested that calls would provide a better index of centrality (Ullman, 1941, 858). Green in another paper suggests that, "the excellence of telephone data lies in their comprehensive nature: they record both the economic and the social links of people separated by distance" (Green, 1955, 291).

As will be discussed with reference to telephone exchange areas, the usefulness of telephone data lies in

"determining the intensity of relationship of one particular settlement with a number of other communities" (Green, 1953, 6).

A second role of telecommunications data, is exemplified by Abler's work in which he adopts the structural approach to the inter-communications system (Abler, 1968). He defines inter-communications media as, "those which are accessible to large numbers of people and which permit two-way message flow" (Abler, 1968, 28). He traces the development of the telephone and postal systems in the United States and of particular importance to this research analyses the way in which communications systems organize areas. His attempt to compare the areal structure of a telephone system with a trade centre hierarchy is the only one known. Some of his findings for the system in the United States are considered for the study region.

The locational aspect of the telecommunication system's elements reflects flow patterns. Accordingly, as a substitute for actual flow data, an analysis of the provincial telephone system is made. The importance of a telecommunication system in this regard is suggested by Pye in that,

> The structure of a communication system is, in a sense, the skeleton of the social body which envelops it. The media themselves are mere extensions of man's physical senses. The content of the medium is the very substance of human intercourse and this flow of communication determines the direction and pace of dynamic social change (Mid-Canada Development Foundation, 1971, 6).

There are two telephone companies operating on the island of Newfoundland, the Newfoundland Telephone Company and Canadian National Telecommunications. Labrador is served by the Bell Canada and Quebec Telephone companies. The occurrence of several operating companies with discontinuous service areas, particularly in the central area of the island for example, affects the supposedly "optimum" switching and administrative regions which might have developed if only one company were operating. Nevertheless, there are distinct areas served by the respective companies.

Before examining the switching aspect of the telephone system, brief reference should be made to the large number of exchanges in the province. This phenomenon in fact provides further evidence of the effect of a rural dispersed population on the costs of providing public and private services.[3] Generally, the distribution costs of telephone services are inversely proportional to population density (Department of Communications, 1971, 27). A

---

[3]As previously noted, the effect of the telephone and telephone systems on spatial organization is the theme of increasing current research (Abler, 1971; Palm, 1973). Except for a thesis examining the inter-relationship between rural telephone service and geographical influences in North Dakota (Brooks, 1963), the converse of this relationship has not been explored, particularly the impact of settlement distribution on the location, spacing and efficiency of a telephone system.

telephone company normally operates under the U-shaped cost curve with constant costs between 1,000 and 4,000 main telephone/stations (O'Brien, 1961, 11). Figure 4.4 shows the proliferation of small size exchanges, below 500 main stations in particular, in census divisions 3, 7, 8, 9, and 10.

The provincial system forms part of the North American continent telephone network. The homing network or switching hierarchy, a nested type, comprises several levels essentially switching or homing on the one immediately above. Figure 4.5 and Table 4.4 summarize the system for the province.

TABLE 4.4

TELEPHONE SWITCHING SYSTEM: NEWFOUNDLAND, 1971

Class	Name	Number	Centres
5	Exchange	216	-
4	Toll Centre	12	Bay Roberts, Bonne Bay, Channel, Clarenville, Goose Bay, Grand Falls, Hermitage, L'Anse au Loup, Marystown, St. Anthony, Stephenville Crossing, Twillingate
3	Primary Centre	2	St. John's and Gander
2	Sectional Centre	1	Corner Brook
1	Regional	1	Montreal

Source: Information supplied by Canadian National Telecommunications and Newfoundland Telephone Company Limited.

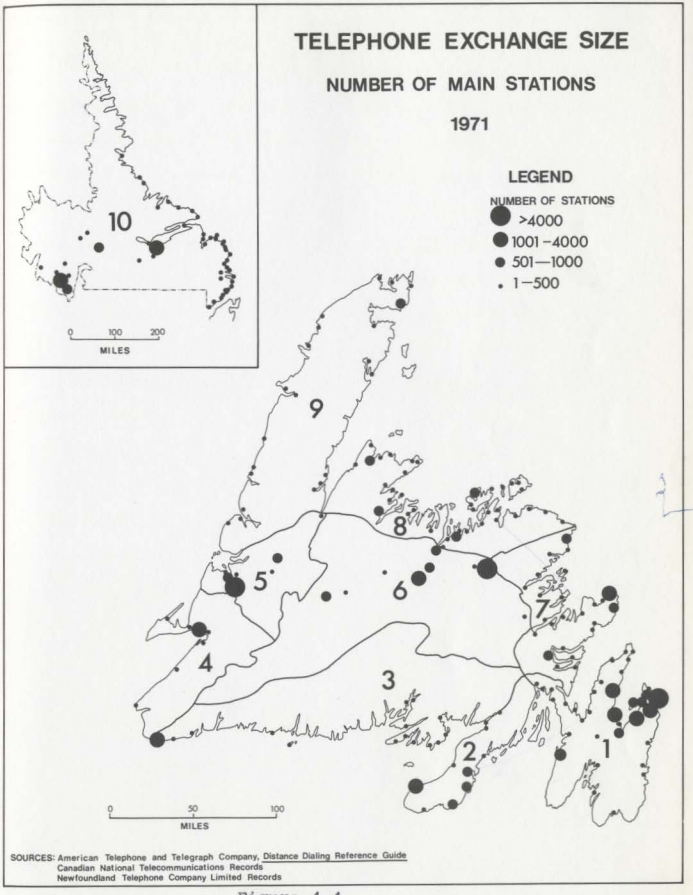

TELEPHONE EXCHANGE SIZE
NUMBER OF MAIN STATIONS
1971
LEGEND
NUMBER OF STATIONS
>4000
1001 – 4000
501 — 1000
1 – 500
10
0 100 200
MILES
9
8
5
6
7
4
3
2
1
0 50 100
MILES
SOURCES: American Telephone and Telegraph Company, Distance Dialing Reference Guide
Canadian National Telecommunications Records
Newfoundland Telephone Company Limited Records

Figure 4.4

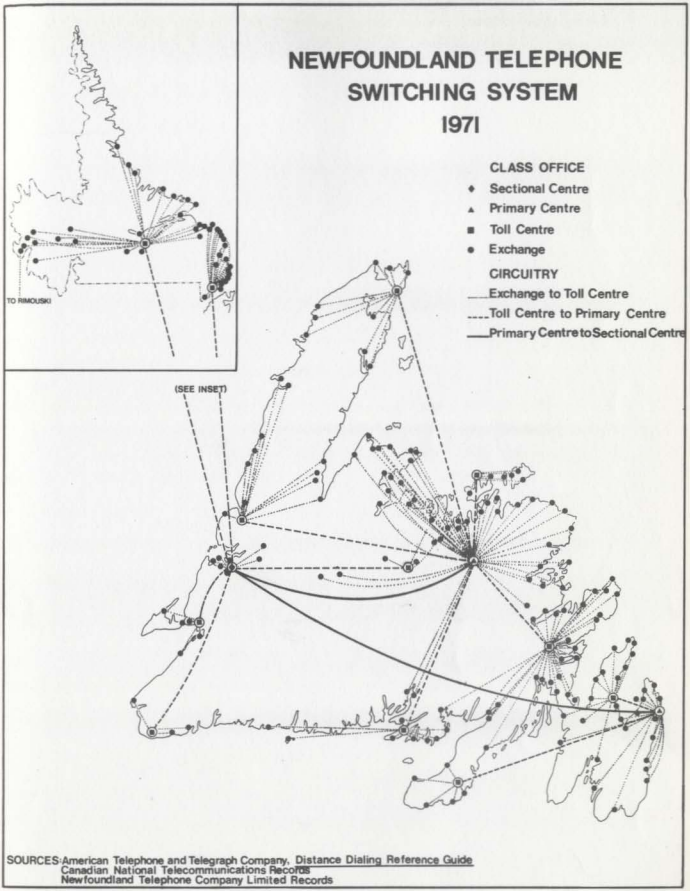

NEWFOUNDLAND TELEPHONE
SWITCHING SYSTEM
1971
CLASS OFFICE
Sectional Centre
Primary Centre
Toll Centre
Exchange
CIRCUITRY
Exchange to Toll Centre
Toll Centre to Primary Centre
Primary Centre to Sectional Centre
TO RIMOUSKI
(SEE INSET)
SOURCES: American Telephone and Telegraph Company. Distance Dialing Reference Guide
Canadian National Telecommunications Records
Newfoundland Telephone Company Limited Records

Figure 4.5

The term 'Exchange' refers to the lowest ranking switching unit which constitutes the basic geographic unit for the determination of local and long distance rates. Also called an Exchange Area, it comprises one or more central offices (buildings where individual telephone connections are terminated) and incorporates usually a central community, the location of the central office, and surrounding communities demonstrating a high mutual community of interest. The Exchange Area usually meets the bulk of telephone demand by its subscribers. Where high community of interest is evident with other nearby exchanges and where customers demand it, free calling between the respective exchange areas is provided by Extended Area Service. Otherwise, toll or long distance charges are applied between exchanges. As Garfield notes, "In establishing each exchange area, the basic objective is to include the primary social and economic interests of the people residing in and around a central community" (Garfield and Lovejoy, 1964, 197).

Toll Centres are class 4 offices. These are the switching centres where exchange toll circuits join the intertoll network. Operators are provided at Toll Centres for the purpose of providing dialing, information and long distance service. The location of class 4 offices is based on a combination of accessibility to other Toll Centres and higher ranking centres and accessibility to homing end offices. This would explain, for example, the designation

of places such as Hermitage and Bonne Bay. Also correspondence with transport junction points would help explain the designation of Stephenville Crossing and not Stephenville.

While the Primary, Sectional, and Regional Centres generally coincide with the largest centres in the areas, their location is also based almost entirely on the accessibility to the higher ranking system rather than the dependent homing centres below them.

There are two purposes for introducing this system. One is to show the inter-relationship between a service centre hierarchy and a telephone hierarchy and the other to identify those settlements selected as the location for exchanges and higher class offices in this province.

It is accepted that a growth centre's role is to function as the node for both local and regional external communications. The Toll Centre in the telephone hierarchy is the lowest level where location is determined by regional-external communications accessibility. Therefore, the problem to be considered is determining the lowest level in the service centre hierarchy at which Toll Centres are manifested.

Abler, in examining this locational relationship in the United States, notes:

> Like other industries the inter-communications services (telephone)... especially at the lower levels ... are products of series of locational decisions. Because inter-communications facilities must be close to people, the areal

> structure of inter-communications media at lower levels is similar to that of the people and their settlement patterns (Abler, 1968, 269).

Tables 4.5 and 4.6 and Figure 4.6 summarize the inter-relationship for 1971 between Telephone Centre and Service Centre locations.

It is at the Full Convenience level where occurrence of higher switching centres becomes evident: 77.8% of Toll Centres are in Full Convenience and higher levels. Conversely 41.2% of Full Convenience Centres have Toll Centres.

Also only 5.9% of Full Convenience Centres have no Rate Centres compared to Minimum Convenience and Hamlets with 31.5% and 52.7% respectively. While this is to be expected at the lower levels with the limited number of rate centres provided, the service centre level at which minimum ranking telephone switching occurs is relevant for the purposes of this research as it reinforces the selection of functional centres chosen earlier.

Regarding the second purpose of introducing the telephone system, Indicator 4 consists of those settlements serving as the location for the various class of telephone offices. Table 4.10 is organized by Toll Centre areas. Exchanges homing on each respective Toll Centre are arranged alphabetically.

TABLE 4.5

DISTRIBUTION OF TELEPHONE CENTRES BY SERVICE CENTRES (1971)

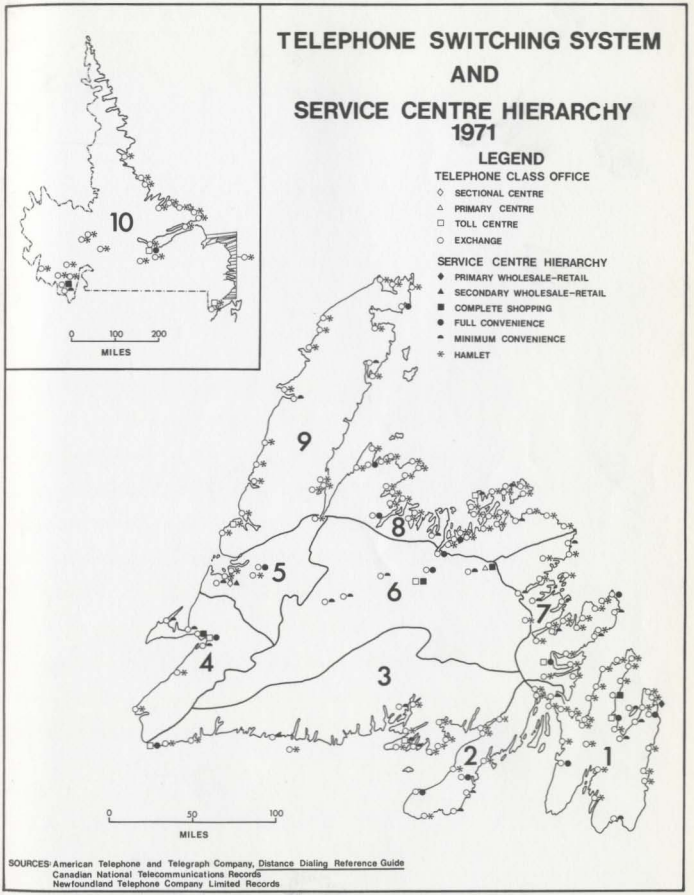
(Percentage)

	Hamlet	Minimum Convenience	Full Convenience	Complete Shopping	Secondary W-R	Primary W-R	Total
Exchange	75.3	17.9	5.5	1.3	0	0	100.0
Toll Centre	0	22.2	66.7	11.1	0	0	100.0
Primary Centre	0	0	0	50.0	0	50.0	100.0
Sectional Centre	0	0	0	0	100.0	0	100.0

TABLE 4.6

DISTRIBUTION OF SERVICE CENTRES BY TELEPHONE CENTRES (1971)

	Exchange	Toll Centre	Primary Centre	Sectional Centre	Nil	Total
Hamlet	47.3	0	0	0	52.7	100.0
Minimum Convenience	65.7	2.8	0	0	31.5	100.0
Full Convenience	52.9	41.2	0	0	5.9	100.0
Complete Shopping	50.0	25.0	25.0	0	0	100.0
Secondary W-R	0	0	0	100.0	0	100.0
Primary W-R	0	0	100.0	0	0	100.0



SOURCES: American Telephone and Telegraph Company, Distance Dialing Reference Guide
Canadian National Telecommunications Records
Newfoundland Telephone Company Limited Records

Figure 4.6

C. GROWTH

1. Settlement Population Increase

Population growth greater than a predetermined average is considered a key indicator in most growth centre identification studies (Moseley, 1972). Accordingly this is used as a further indicator and the provincial average of 14.0% and the urban average of 35.1% for 1961-1971 are the chosen benchmarks. Five categories of growth are established and comprise Indicator 5, as shown in Table 4.11.

2. Business Telephone Growth

The second growth indicator is the business telephone growth rate. A business telephone index is more advantageous than a total or residential telephone growth rate in that, in addition to reflecting population increase, it indicates the changing centrality and economic health of an area.

The average annual provincial growth rate, 1963-1971 in main business telephones was 5.1%. Table 4.12 lists only those exchanges with increases in business telephones by Toll Centre areas.

Summary of Indicators

The final step in the identification exercise is to summarize the six indicators. Only those centres which had positive performance in all indicators are included in

Table 4.13 and Figure 4.7. The rigidity of the identification process is enforced considering this pre-requisite for inclusion in the final list. Each respective centre's points (maximum 30) are totalled and the centres ranked.

Analyzing the performance of the identified centres provides some interesting results even though there are few, if any, surprises in the ranking.

Eleven of the twenty centres are in present DREE Special Areas and two others, Channel-Port-aux-Basques, and Placentia (Freshwater) were to form the focus of planned Special Areas in negotiations for the First Special Areas Agreement.

Considering that the structure, flow and growth variables constitute 33 1/3% respectively of the total points, the performance of centres in each aspect is noteworthy. The positions of St. John's and Gander can be attributed to a strong performance in all three aspects. The other established centres of Corner Brook, Grand Falls, Windsor and Carbonear had relatively poor growth performance.

The performance of all other 'new' centres with few exceptions can be accounted for by a disproportionately higher show of growth characteristics reinforcing the observation earlier that structure and functional characteristics should be also considered.

The final general observation is that all census divisions are represented although divisions 8, 9, 10 do not have any of the higher ranking centres.

While this is admittedly a passive or reinforcing approach in growth centre identification as was DREE's "safe" selections of Special Areas, the centres chosen are obvious choices. There is no guarantee that any of these centres will continue to grow because of past performance. However, the selections are justifiable for several reasons. Established service centres contain the necessary infrastructure, population base and communication links considered necessary for expansion. Usually few, if any alternatives are available in rural regions except for possible growth pole industrial complexes such as oil refinery development in certain settlements. It would seem reasonable that these established centres should be eliminated from contention if necessary before new locations are considered. Finally, and particularly important for this research, service centres, growth centres, and resettlement reception centres are synonymous. As was discussed in Chapter II, one of the main goals of the Resettlement Programs is to increase accessibility to goods and services as well as present and future employment opportunities.

Critique

The choice of the indicators and weighting-ranking system are the focus of the critique. The six indicators were selected to reflect both growth and centrality aspects of growing service centres. The frequent use of telephone data is consistent with a secondary objective, namely illustrating the versatility of this data source. The technique in general has the advantage of being both simple and intuitively acceptable. The suggested approach is justifiable partly by the uncomplicated nature of the service centre system examined. Its acceptability stems from the fact that it identifies obvious centres which intuitively might have been chosen.

While centres are ranked as might be expected, limited significance should be placed on the actual final values assigned. This shortcoming is due to the arbitrary weighting and ranking system employed whereby each indicator carried equal weight. Whether this approach applies to other regions and types of centres requires more research beyond the scope of this study. The problem in social research of deciding on the degree of statistical perfection required in scaling and measuring before proceeding still remains. Phillips, in reviewing the problem, recommends proceeding before the instruments have been perfected for some studies in that the knowledge gained by the exercise can be used, if necessary, to improve the method (Phillips,

1966, 168). However, because of the reasonableness of the results achieved, it was felt changes were not justifiable for the present purposes.

TABLE 4.7

INITIAL POPULATION SIZE

INDICATOR 1

1971

Settlement	Size	Scale*
Badger	1187	1
Badgers Quay-Valleyfield, Pools Island	1457	1
Baie Verte	2397	2
Bay Bulls	1011	1
Bay Roberts	3702	2
Benoits Cove	1187	1
Bishop's Falls	4133	2
Bonavista	4215	2
Botwood	4115	2
Buchans	1917	1
Burgeo	2226	2
Burin	2586	2
Carbonear	4732	2
Catalina	1131	1
Channel-Port aux Basques	5942	3
Churchill Falls	3402	2
Clarenville	2193	2
Corner Brook	26,309	4
Dark Cove-MiddleBrook-Gambo	2586	2
Deer Lake	4421	2

TABLE 4.7 (Continued)

Settlement	Size	Scale
Dunville	1742	1
Englee	1050	1
Fogo	1155	1
Fortune	2165	2
Freshwater	1562	1
Gander	7748	3
Glovertown	1915	1
Goose Bay	1591	1
Grand Bank	3476	2
Grand Falls	7677	3
Happy Valley	4937	2
Harbour Breton	2196	2
Harbour Grace	2771	2
Hare Bay	1485	1
Holyrood	1282	1
Isle aux Morts	1158	1
Jerseyside	1061	1
Kelligrews	2046	2
Kilbride	2148	2
Kippens	1383	1
Labrador City	7622	3
La Scie	1255	1
Lawn	1000	1
Lewisporte	3175	2
Long Pond	1758	1

TABLE 4.7 (Continued)

Settlement	Size	Scale
Manuels	1006	1
Marystown	4960	2
Milltown	1233	1
Mount Pearl	7211	3
Musgrave Harbour-Doting Cove	1232	1
Norris Arm	1191	1
Placentia	2211	2
Portugal Cove	1411	1
Pouch Cove	1483	1
Ramea	1208	1
Robert's Arm	1044	1
Roddickton	1239	1
St. Albans	1941	1
St. Anthony	2593	2
St. George's	2082	2
St. John's	88,102	5
St. Lawrence	2173	2
Spaniard's Bay	1764	1
Springdale	3224	2
Stephenville	7770	3
Stephenville Crossing	2129	2
Torbay	2090	2
Trepassey	1443	1
Twillingate	1437	1

TABLE 4.7 (Continued)

Settlement	Size	Scale
Upper Island Cove	1819	1
Victoria	1601	1
Wabana	5421	3
Wabush	3387	2
Wesleyville	1142	1
Whitbourne	1235	1
Windsor	6644	3

* Scaling system: 1,000-1,999 (1)
2,000-4,999 (2)
5,000-9,999 (3)
10,000-29,999 (4)
≥ 30,000 (5)

TABLE 4.8

SERVICE CENTRE CLASSIFICATION

INDICATOR 2

1971

Centre	Classification	Scale*
Baie Verte	Full Convenience	1
Bay Roberts	Full Convenience	1
Bishops Falls	Full Convenience	1
Bonavista	Full Convenience	1
Botwood	Full Convenience	1
Carbonear	Complete Shopping	3
Channel-Port aux Basques	Full Convenience	1
Clarenville	Full Convenience	1
Corner Brook	Secondary Wholesale-Retail	4
Deer Lake	Full Convenience	1
Gander	Complete Shopping	3
Grand Bank	Full Convenience	1
Grand Falls-Windsor	Complete Shopping	3
Happy Valley	Full Convenience	1
Labrador City	Complete Shopping	3
Lewisporte	Full Convenience	1
Marystown	Full Convenience	1
Mount Pearl	Full Convenience	1
Placentia	Full Convenience	1

TABLE 4.8 (Continued)

Centre	Classification	Scale
St. Anthony	Full Convenience	1
St. John's	Primary Wholesale-Retail	5
Springdale	Full Convenience	1
Stephenville	Complete Shopping	3
Stephenville Crossing	Full Convenience	1

* Scaling System: Full Convenience (1)
Partial Shopping (2)
Complete Shopping (3)
Secondary W-R (4)
Primary W-R (5)

TABLE 4.9

RETAIL SALES PER CAPITA INDEX

INDICATOR 3

1966

Centre/Division	Retail Sales	L.Q. Prov.	L.Q. Div.	Scale*
Newfoundland	822.07	-	-	
Division 1	912.77	1.11	1.15	3
Bay Roberts	1,045.93	1.27	1.15	2
Carbonear	1,364.07	1.66	1.49	4
Harbour Grace	882.67	1.07	.97	1
Placentia	1,210.07	1.47	1.33	2
St. John's	1,623.71	1.96	1.78	5
Division 2	601.92	.73	-	
Burin	1,406.76	1.71	2.34	4
Fortune	662.36	.81	1.10	
Grand Bank	1,118.89	1.36	1.86	2
Marystown	966.16	1.18	1.61	1
Division 3	708.21	.86	-	
Channel-Port aux Basques	1,167.57	1.42	1.65	3
Harbour Breton	1,030.86	1.25	1.46	2
Division 4	523.63	.64	-	
Stephenville	1,102.10	1.34	2.11	2
Stephenville Crossing	637.11	.78	1.22	
Division 5	1,222.56	1.49	-	
Corner Brook	1,547.31	1.88	1.27	5
Deer Lake	1,057.71	1.29	.87	2

TABLE 4.9 (Continued)

	Retail Sales	L.Q. Prov.	L.Q. Div.	Scale
Division 6	1,168.67	1.42	-	
Gander	1,819.41	2.21	1.56	5
Grand Falls-Windsor	1,837.98	2.24	1.57	5
Division 7	590.76	.72	-	
Bonavista	809.14	.98	1.37	
Catalina	1,178.60	1.43	1.96	3
Clarenville	2,157.47	2.62	3.65	5
Glovertown	920.06	1.12	1.56	1
Division 8	525.62	.64	-	
Baie Verte	1,081.34	1.32	2.06	2
Fogo	552.96	.67	1.05	
Lewisporte	1,895.99	2.31	3.61	5
Springdale	950.99	1.16	1.81	1
Twillingate	1,133.41	1.38	2.16	2
Division 9	439.61	.54	-	
Roddickton	664.54	.81	1.51	
St. Anthony	756.77	.92	1.72	
Division 10	793.98	.97	-	
Happy Valley	976.61	1.19	1.23	1

* Scaling System: L.Q. 1.00 - 1.19 (1)
1.20 - 1.39 (2)
1.40 - 1.59 (3)
1.60 - 1.79 (4)
>1.80 (5)

Source: Developed from: Statistics Canada, Census 1966, 97-603, and Historical Statistics of Newfoundland and Labrador, Table T-7, 1970.

TABLE 4.10

TELEPHONE CENTRE LOCATION

INDICATOR 4

1971

Centre	Class Office	Scale*
Bay Roberts	Toll Centre	2
Carbonear	Exchange	1
Whitbourne	Exchange	1
Channel-Port aux Basques	Toll Centre	2
Isle aux Morts	Exchange	1
Clarenville	Toll Centre	2
Bonavista	Exchange	1
Catalina	Exchange	1
Corner Brook	Sectional Centre	4
Benoits Cove	Exchange	1
Deer Lake	Exchange	1
Gander	Primary Centre	3
Badger	Exchange	1
Baie Verte	Exchange	1
Buchans	Exchange	1
Gambo	Exchange	1
Glovertown	Exchange	1
Hare Bay	Exchange	1
La Scie	Exchange	1
Lewisporte	Exchange	1
Milltown	Exchange	1
Musgrave Harbour	Exchange	1
Norris Arm	Exchange	1
Robert's Arm	Exchange	1
Springdale	Exchange	1
St. Albans	Exchange	1
Wesleyville	Exchange	1
Goose Bay (Happy Valley)	Toll Centre	2
Wabush	Exchange	1

TABLE 4.10 (Continued)

Centre	Class Office	Scale
Grand Falls	Toll Centre	2
Bishop's Falls	Exchange	1
Botwood	Exchange	1
Hermitage	Toll Centre	2
Burgeo	Exchange	1
Harbour Breton	Exchange	1
Ramea	Exchange	1
Marystown	Toll Centre	2
Burin	Exchange	1
Grand Bank	Exchange	1
St. Lawrence	Exchange	1
Rimouski	Toll Centre	2
Labrador City	Exchange	1
St. Anthony	Toll Centre	2
Englee	Exchange	1
Roddickton	Exchange	1
St. John's	Primary Centre	3
Bell Island	Exchange	1
Freshwater (Placentia)	Exchange	1
Long Pond	Exchange	1
Mount Pearl	Exchange	1
Portugal Cove	Exchange	1
Pouch Cove	Exchange	1
Torbay	Exchange	1
Trepassey	Exchange	1
Stephenville Crossing	Toll Centre	2
St. George's	Exchange	1
Stephenville	Exchange	1
Twillingate	Toll Centre	2
Fogo	Exchange	1

* Scaling System: Exchange (1); Toll Centre (2); Primary Centre (3); Sectional Centre (4); Regional Centre (5).

Source: Information supplied by Canadian National Telecommunications and Newfoundland Telephone Company Limited.

TABLE 4.11

POPULATION GROWTH RATE

INDICATOR 5

1961-1971

Centre	Rate %	Scale*
Badger	14.6	2
Baie Verte	150.2	5
Bay Bulls	45.1	5
Bay Roberts	78.8	5
Benoits Cove	49.9	5
Bishop's Falls	0.8	1
Bonavista	0.7	1
Botwood	11.8	2
Buchans	-32.6	-
Burgeo	53.1	5
Burin	126.0	5
Carbonear	11.8	2
Catalina	01.9	1
Channel-Port aux Basques	43.5	5
Churchill Falls	3402.0	5
Clarenville	42.3	5
Corner Brook	04.5	1
Dark Cove-Middle Brook-Gambo	18.7	3
Deer Lake	10.6	2
Dunville	55.4	5

TABLE 4.11 (Continued)

Centre	Rate %	Scale
Englee	30.9	4
Fogo	0.3	1
Fortune	59.1	5
Freshwater	11.9	2
Gander	35.3	5
Glovertown	60.0	5
Goose Bay	59.1	5
Grand Bank	28.6	4
Grand Falls	16.2	3
Happy Valley	72.6	5
Harbour Breton	104.1	5
Harbour Grace	04.6	1
Hare Bay	01.2	1
Holyrood	62.5	5
Isle aux Morts	31.0	4
Jerseyside	15.0	3
Kelligrews	36.4	5
Kilbride	404.3	5
Kippens	28.2	4
Labrador City	974.6	5
La Scie	33.7	4
Lawn	39.7	5
Lewisporte	17.5	3
Long Pond	219.7	5
Manuels	39.0	5

TABLE 4.11 (Continued)

Centre	Rate %	Scale
Marystown	193.3	5
Milltown	26.9	4
Mount Pearl	158.9	5
Musgrave Harbour-Doting Cove	16.0	3
Norris Arm	-2.9	-
Placentia	37.3	5
Portugal Cove	23.7	3
Pouch Cove	12.0	2
Ramea	24.5	4
Robert's Arm	39.2	5
Roddickton	04.6	1
St. Albans	25.5	4
St. Anthony	42.5	5
St. George's	76.3	5
St. John's	38.5	5
St. Lawrence	03.7	1
Spaniard's Bay	36.9	5
Springdale	15.3	3
Stephenville	28.6	4
Torbay	18.2	3
Trepassey	150.1	5
Twillingate	51.7	5
Upper Island Cove	9.1	2
Victoria	6.3	1

TABLE 4.11 (Continued)

Centre	Rate %	Scale
Wabana	-32.5	-
Wabush	1243.0	5
Wesleyville	-11.1	-
Whitbourne	13.8	2
Windsor	20.7	3

* Scaling System:

very slow	0-7.0	(1)
slow	7.1-14.0	(2)
moderate	14.1-24.0	(3)
fast	24.1-35.0	(4)
very fast	> 35.0	(5)

TABLE 4.12

BUSINESS TELEPHONE GROWTH RATES

INDICATOR 6

1963-1971

Centre	Growth Rates (%)	Scale*
Bay Roberts	1.2	1
Carbonear	1.4	1
Whitbourne	7.9	2
Channel-Port aux Basques	3.2	1
Clarenville	3.8	1
Bonavista	2.5	1
Catalina	1.7	1
Corner Brook	5.9	2
Benoits Cove	25.0	5
Deer Lake	5.3	2
Gander	7.2	2
Badger	1.2	1
Baie Verte	9.0	2
Buchans	2.3	1
Glovertown	2.8	1
Hare Bay	17.5	4
La Scie	12.2	2
Lewisporte	1.2	1
Milltown	100.0	5
Springdale	4.7	1
St. Albans	9.7	2
Wesleyville	3.8	1
Goose Bay	N.A.	
Grand Falls	0.6	1
Botwood	2.9	1

TABLE 4.12 (Continued)

Centre	Growth Rates (%)	Scale
Hermitage	-	-
Burgeo	15.0	3
Harbour Breton	4.9	1
Ramea	15.5	4
Marystown	75.8	5
Burin	46.6	5
Grand Bank	17.6	4
St. Lawrence	3.3	1
St. Anthony	14.0	3
Englee	13.6	3
Roddickton	18.5	4
St. John's	5.8	2
Freshwater (Placentia)	2.4	1
Long Pond	3.5	1
Mount Pearl	(included in St. John's)	2
Portugal Cove	(included in St. John's)	2
Pouch Cove	6.3	2
Torbay	(included in St. John's)	2
Sept Isles	-	
Labrador City	not available	
Wabush	not available	
Stephenville Crossing	-	
St. George's	2.4	1
Stephenville	3.8	1
Twillingate	0.6	1
Fogo	8.5	2

* Scaling System:
0.1-5.0 (1)
5.1-10.0 (2)
10.1-15.0 (3)
15.1-20.0 (4)
7 20.0 (5)

Source: Calculated from information supplied by Canadian National Telecommunications and Newfoundland Telephone Company Limited.

TABLE 4.13

IDENTIFIED GROWTH CENTRES

Indicator / Centre	Initial Size	Service Centre Class	Percentage of Total	Retail Sales per Capita	Telephone Centre Location	Percentage of Total	Population Growth	Business Telephone Growth	Percentage of Total	Total Points
St. John's	5	5	40.0	5	3	32.0	5	2	28.0	25
Gander	3	3	28.6	5	3	38.1	5	2	33.3	21
Corner Brook	4	4	40.0	5	4	45.0	1	2	15.0	20
Grand Falls-Windsor	3	3	35.3	5	2	41.2	3	1	23.5	17
Marystown	2	1	18.8	1	2	18.8	5	5	62.4	16
Clarenville	2	1	18.8	5	2	43.8	5	1	37.4	16
Channel-Port aux Basques	3	1	26.7	3	2	33.3	5	1	40.0	15
Grand Bank	2	1	21.5	2	1	21.5	4	4	57.0	14
Stephenville	3	3	42.9	2	1	21.5	4	1	35.6	14
Baie Verte	2	1	23.1	2	1	23.1	5	2	53.8	13
Bay Roberts	2	1	23.1	2	2	30.8	5	1	46.1	13
Carbonear	2	3	38.5	4	1	38.5	2	1	23.0	13
Lewisporte	2	1	23.0	5	1	46.2	3	1	30.8	13

TABLE 4.13 (Continued)

Indicator / Centre	Initial Size	Service Centre Class	Percentage of Total	Retail Sales per Capita	Telephone Centre Location	Percentage of Total	Population Growth	Business Telephone Growth	Percentage of Total	Total Points
St. Anthony	2	1	23.1	(1)	2	15.4	5	3	61.5	13
Placentia (Freshwater)	2	1	25.0	2	1	25.0	5	1	50.0	12
(2) Labrador City	3	3	50.0	N.A.	1	8.4	5	N.A.	41.6	12
(2) Happy Valley-Goose Bay	2	1	27.3	1	2	27.3	5	N.A.	45.5	11
Deer Lake	2	1	30.0	2	1	30.0	2	2	40.0	10
Springdale	2	1	33.3	1	1	22.3	3	1	44.4	09
Bonavista	2	1	50.0	(1)	1	16.7	1	1	33.3	06

NOTE (1) Centres with L.Q. $\geq$ 1.00 for census division but $<$ 1.00 for province. Included in list but no points awarded.

(2) Labrador City and the Happy Valley-Goose Bay area have been included although information regarding Indicator 6 was unavailable. The strong performance in the other indicators was taken into account, particularly for Labrador City.

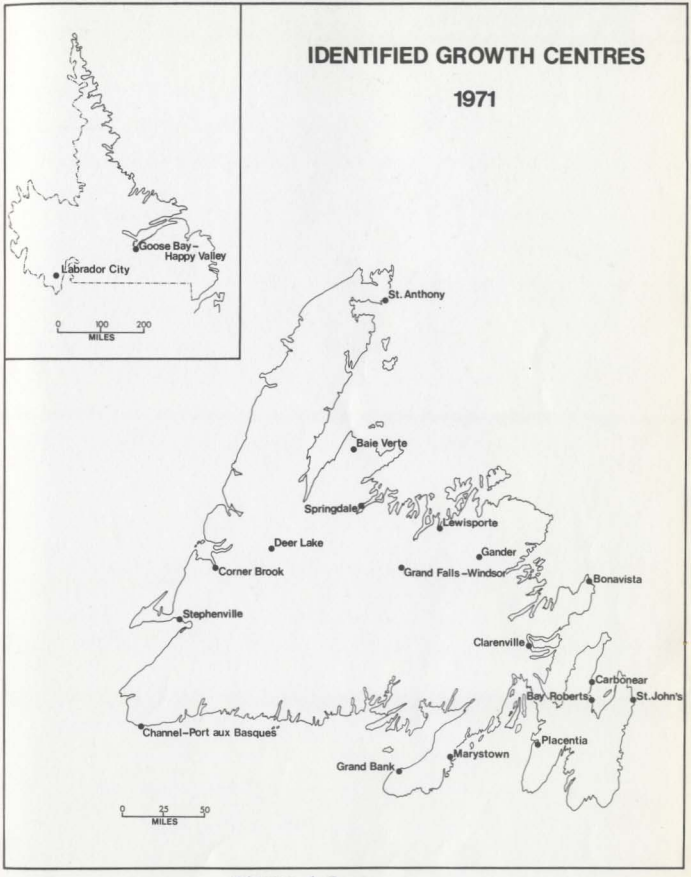

IDENTIFIED GROWTH CENTRES
1971
Goose Bay–
Happy Valley
Labrador City
0 100 200
MILES
St. Anthony
Baie Verte
Springdale
Lewisporte
Deer Lake
Gander
Corner Brook
Grand Falls–Windsor
Bonavista
Stephenville
Clarenville
Carbonear
Bay Roberts
St. John's
Channel–Port aux Basques
Placentia
Marystown
Grand Bank
0 25 50
MILES

Figure 4.7

CHAPTER V

SPATIAL ANALYSIS OF THE RESETTLEMENT PROGRAMS: DESCRIPTIVE STAGE

Spatial reorganization via a planned population concentration process is exemplified by the Newfoundland Household Resettlement Programs. The following analysis affords the opportunity to examine the spatial ramifications of such an assisted mobility program designed to move towards an equilibrium insofar as people and goods and services are spatially coincident. Two major problem areas arise, however, when an attempt is made to define patterns of spatial organization which achieve desirable conditions of spatial proximity. Awareness of the locational preference of a population is perhaps the most important factor in regional development planning which is based on a growth centre strategy. This problem is compounded by the realization that:

> ...as individuals and certainly at the societal level, we have no clearly defined spatial values. Consequently, we find it virtually impossible to make practical and policy decisions in any rational and humanistic manner, since we do not agree on what we're trying to maximize or minimize (Abler, 1971, 19).

The second problem arises out of the first, in that if a system of unbalanced growth employing a growth centre strategy is deemed desirable, then the question is, what type of growth centre strategy is applicable for the region? This question consists of two components, namely: the functional and spatial aspects of centres. The idea of natural growth centres functioning as growing service centres, and the spatial aspects of critical minimum size, greater numbers, and regional location, have been discussed. Also introduced in the review of the DREE Special Areas strategy was the notion of broadening the term growth centre to include growth area. The importance of this aspect in interpreting resettlement patterns will be emphasized during the analysis.

Both the major related problem areas of understanding the locational preference and applicable complementary growth centre strategy are attacked in the following two chapters through an examination of the household resettlement which has occurred during 1965-1972. The analysis is designed to show the response of a segment of the province's population to a government sponsored mobility program.

The objectives of the Resettlement Programs summarized in Chapter II have been to increase accessibility to employment opportunities and to goods and services, while simultaneously reducing the problem of marginality. Despite

a certain degree of government control over ultimate destination of resettled households to accomplish these objectives, there was considerable amount of migrant choice respecting the reception centres. Insofar as this was the case, the analysis of the programs provides indications of locational preference. Distances resettled households were willing to migrate and types of centres into which they relocated reveal those spatial preferences. The results also provide guidelines for future planning of settlement patterns. Towards these ends, the resettlement data has been subjected to several types of spatio-temporal examinations in a progressive, diagnostic manner.

Section A examines the relationship between originating-terminating movement and five independent variables at the census division level using simple linear regression.

This scale of analysis provides a general, or first stage, areal overview of the response of resettled households to factors considered indicative of the economic-social spatial structure in the respective census divisions. The five variables which can be loosely termed pull or push factors include the incidence of urban population, growing service centres, marginality, average family income and high school capacity.

Section B shifts the focus to analyze movement at the individual centre type level. Size of sending-receiving

centres is calculated and resettlement terminating in the identified natural growth centres, fishery growth centres, and urban centres is ascertained.

Section C is concerned with measuring the nature of and changes in resettlement distances. Olsson's centre size flow technique indicates a relative type distance (Olsson, 1965), while a Transaction Flow Model identifies significantly strong flows at the census division level (Savage and Deutsch, 1960).

Section D focuses on the concept of accessibility by examining resettlement into DREE's Special Areas and within a potential commuting area of the identified growth centres and various urban size centres.

Section A: Census Division Characteristics

The purpose of this section is to give an overview of resettlement at the census division scale, particularly the correlation of movement with selected push-pull factors. The response of households to conditions of marginality, lack of higher ranking service centres and high school facilities, and low incomes is interpreted as response to potential push factors. It would be expected that resettlement would originate in census divisions demonstrating these conditions. Conversely, census divisions containing potential attractive or pull factors of urban centres, higher ranking service centres, higher income sources, and

more high school facilities should receive resettled households. While there are undoubtedly push-pull factors of an individual and political nature influencing resettlement, it is felt that these selected variables reflect the social and economic conditions for which the Resettlement Programs were designed.

The variables and the census division distributions are shown in Table 5.1. The two dependant variables are household resettlement originating (sent) and terminating (received) for the period 1965-1972.[1] Variable 3 is the 1966 distribution of urban population developed from Statistics Canada Census, 1966. Variable 4 is the 1971 distribution of Full Convenience and higher ranking service centres used as Indicator 2 in the identification of growth centres. The figures represent the total points allocated for the occurrence of the various types of centres. Each type of centre, it will be remembered from Chapter IV carried a weighted value. For example, census division 1 had one primary (5 points), one complete shopping (2 points), and three full convenience centres (3 points), for a total of 10 points. Variable 5 "School Rooms", indicates the number of high school classrooms based on 1971 data supplied by the Department of Education of the provincial government. Variable 6 is the average income per family

---

[1]Data source for statistics used in this analysis; Department of Community and Social Development, Statistics Federal-Provincial Resettlement Program, 1970, 1971, 1972. Data is recorded in the documents by each fiscal year, April 1-March 31.

TABLE 5.1

CENSUS DIVISION CHARACTERISTICS

VARIABLES

Census Division	Resettlement Sent	Resettlement Received	Urban Population	Service Centres	School Rooms	Family Income	Marginal Population
1	226	1087	136,975	10	456	4,201	5,281
2	1220	608	10,038	2	54	2,504	3,441
3	524	406	12,740	1	59	2,696	14,364
4	269	300	11,480	4	100	3,689	0
5	36	93	31,427	6	100	4,993	0
6	60	111	36,335	8	144	5,117	0
7	390	276	8,257	2	74	2,447	4,349
8	452	397	13,597	3	133	2,635	13,791
9	498	370	3,492	1	65	2,494	16,948
10	201	228	11,425	7	65	4,503	11,905

household in 1961 developed from Statistics Canada, Census 1961. Finally, Variable 7 is the amount of each census division's marginal population based on that proportion located beyond the 45 minute commuting distance of settlements of greater than or equal to 2000 in 1966 (Figure 1.5).

The variables indicate, therefore, the presence at the census division level of urban places, goods and services, educational facilities, areas of economic well being, and finally, areas of isolation.

Table 5.2 summarizes the correlations achieved by simple linear regression.

Only three of the ten dependent/independent pairs of variables met the significance level for the total period; received and urban (.7291); received and school rooms (.7538); and finally, sent and family income (-.7413).

During the seven-year period there was an increasing trend towards correlations in the three sets of variables except for the fluctuation during 1969-71. The interpretation and implication of these results will be discussed in conjunction with findings of the remaining sections. However, it is tentatively concluded at this stage and scale of examination that households have not resettled in response to the selected factors to the degree expected. It is recognized that there are limitations in the small number of cases, namely ten census divisions and the problem of scale of specifically large size and internal

TABLE 5.2

CORRELATION MATRIX

Year	Urban Population	Service Centre	School Rooms	Family Income	Marginal Population
			Sent		
1965-66	.0247	-.3059	-.0060	-.5688	.1322
1966-67	-.1450	-.3821	-.1587	-.5120	.0284
1967-68	-.2682	-.4600	-.2937	-.5892	.0585
1968-69	-.1461	-.4840	-.1482	-.6668	.1594
1969-70	-.4762	-.7447*	-.4117	-.7377*	.3335
1970-71	-.2423	-.5776	-.2272	-.5303	.6188
1971-72	-.3802	-.6394	-.3747	-.7065*	.1655
Total Period	-.3065	-.6225	-.3026	-.7413*	.2242
			Received		
1965-66	.2814	-.2352	.2787	-.6092	.2847
1966-67	.8592*	.3941	.8878*	-.0704	.1029
1967-68	.8006*	.3767	.8107*	-.1013	.0999
1968-69	.8034*	.3605	.8110*	-.0948	-.0195
1969-70	-.0459	-.3349	.0234	-.4821	.1365
1970-71	.0837	-.3584	.0754	-.4005	.3757
1971-72	.6876	.1748	.7081*	-.2669	.0921
Total Period	.7291*	.2181	.7538*	-.2387	.1262

* Significant at .05 level.

diversity of some of the divisions. However, as will be demonstrated in the succeeding sections, the results of this examination are indicative of the general nature and trend of resettlement, being consonant with results of the other types of examinations.

Section B: Centre Size and Function

This section examines resettlement into different size and function categories of reception centres. The shift in focus provides another approach to the data while simultaneously overcoming the scale problem in Section A.

Figure 5.1 summarizes the movement into the twenty identified natural growth centres (1971), seventy-five urban centres (1966), and the twenty-five fishery growth centres. It should be realized that these types are not mutually exclusive since such centres appear in more than one category. However, this method of presentation does indicate that regardless of how the reception centres are categorized, a low proportion of households resettled into them. All except the urban centres received well below 50%. Concisely stated, for the total period, households have not resettled to any significant degree in those centres designated in terms of the government's objectives, namely, large centres providing goods and services. Regarding the trends, however, during the seven years, the urban and identified growth centres began receiving above the total

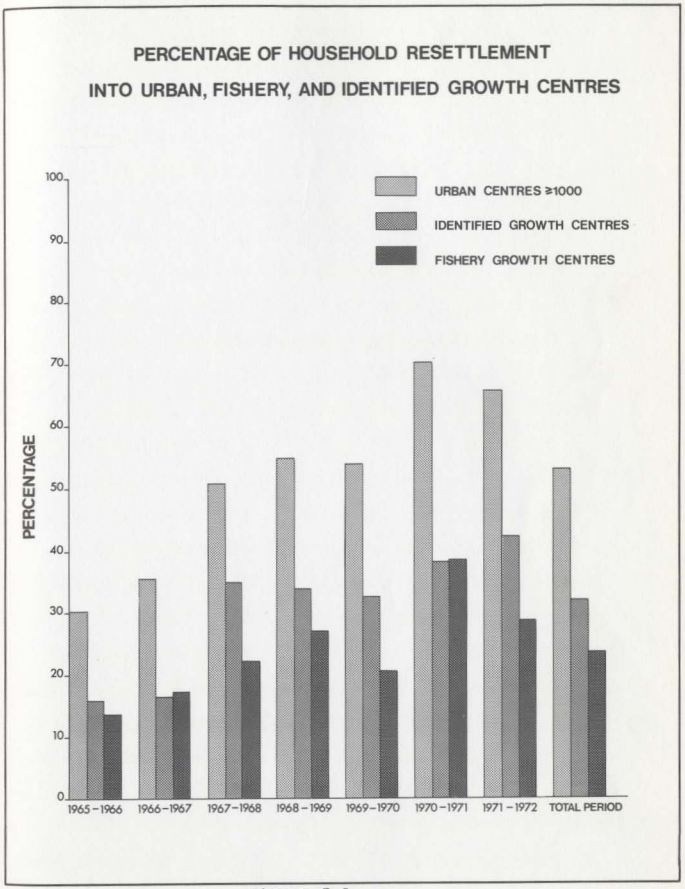

PERCENTAGE OF HOUSEHOLD RESETTLEMENT
INTO URBAN, FISHERY, AND IDENTIFIED GROWTH CENTRES
URBAN CENTRES ≥1000
IDENTIFIED GROWTH CENTRES
FISHERY GROWTH CENTRES
PERCENTAGE
100
90
80
70
60
50
40
30
20
10
0
1965 – 1966
1966 – 1967
1967 – 1968
1968 – 1969
1969 – 1970
1970 – 1971
1971 – 1972
TOTAL PERIOD

Figure 5.1

period averages during 1967-68. The three categories experienced a drop in 1969-70 but a substantial increase in proportion of resettlement in 1970-71.

The following series of figures and tables indicate the components of each category. Resettlement by receiving centre size is given in Figure 5.2. For the total period households resettled into mainly rural and small urban centres, while 53.4% settled into urban centres, 70.5% moved to places of less than 2000. There is an evolving trend of movement to the larger size urban centres, however, as evidenced by the decline in the share of the less than 2000 segment from 81.8% in 1965-66 to 52.2% in 1971-72. Conversely, places of greater than 5000 increased their proportion from only 2.0% in 1965-66 to 22.2% in 1971-72. The urban trend was characterized by several fluctuations. During 1967-68 the urban proportion rose significantly to 51.9% from 36.0% in 1966-67. In 1969-70 it dropped from the previous year by 1.0% and then rose to 70.1% in 1970-71.

Corresponding to this movement to larger places was the increase in movement from larger sending centres as shown in Figure 5.3. While centres of less than 100 originated the highest proportion of 33.3% for the total period, their share diminished from 92.9% in 1965-66 to 13.8% in 1971-72. Places of greater than 500, however, increased their proportion from 1% to 21.3% for these same years.

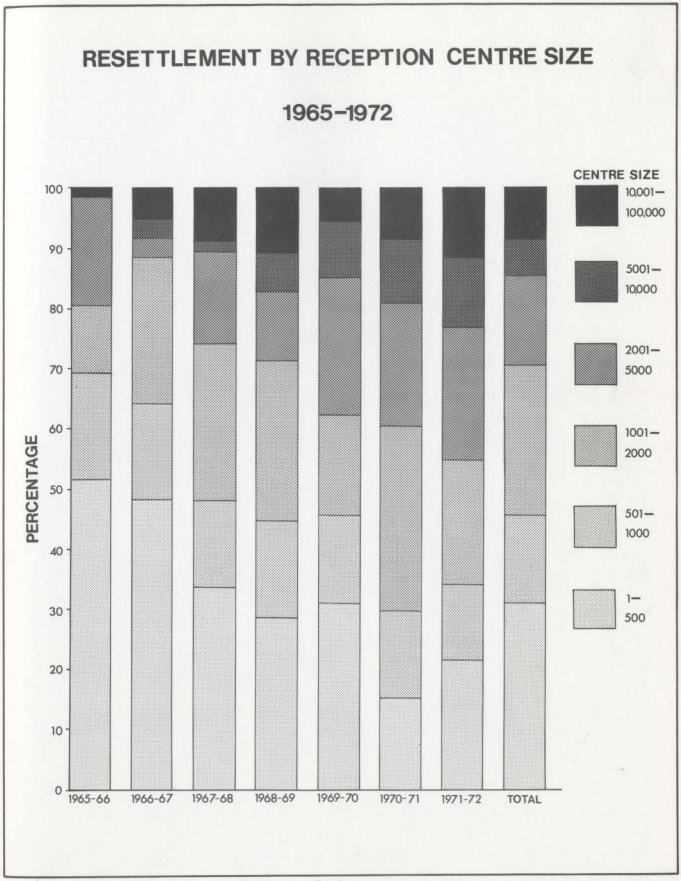

RESETTLEMENT BY RECEPTION CENTRE SIZE
1965–1972
PERCENTAGE
100
90
80
70
60
50
40
30
20
10
0
1965-66
1966-67
1967-68
1968-69
1969-70
1970-71
1971-72
TOTAL
CENTRE SIZE
10,001–
100,000
5001–
10,000
2001–
5000
1001–
2000
501–
1000
1–
500

Figure 5.2

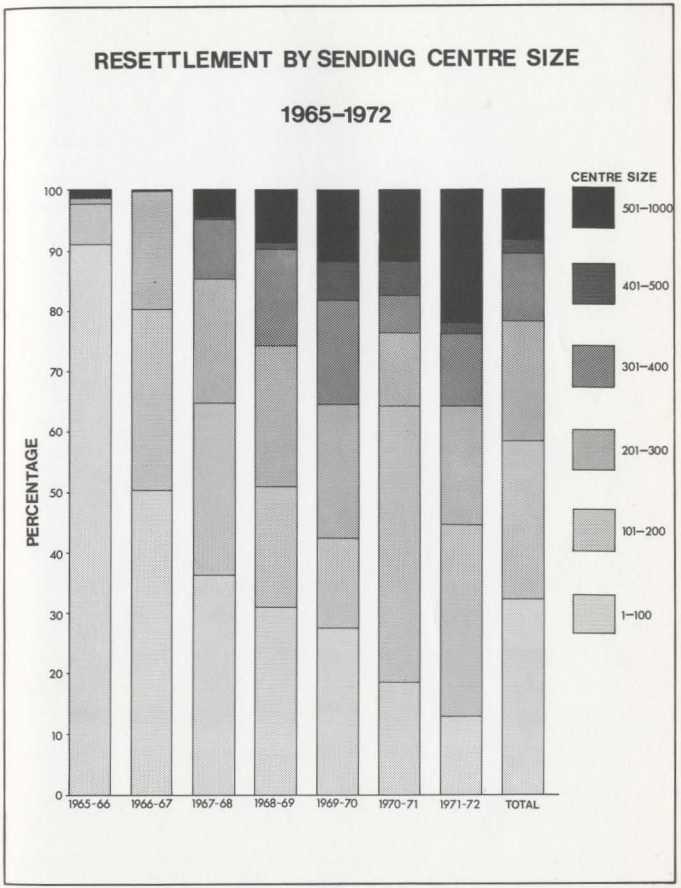

RESETTLEMENT BY SENDING CENTRE SIZE
1965–1972
PERCENTAGE
100
90
80
70
60
50
40
30
20
10
0
1965-66
1966-67
1967-68
1968-69
1969-70
1970-71
1971-72
TOTAL
CENTRE SIZE
501–1000
401–500
301–400
201–300
101–200
1–100

Figure 5.3

Table 5.3 summarizes movement into the identified growth centres. While there were 312 reception centres, these 20 centres received 32.5% of the resettlement for the total period. Four centres, St. John's (6.6%), Placentia (3.8%), Stephenville (3.8%) and Happy Valley-Goose Bay (3.4%) received a total of over half of this proportion. Conversely, what is probably more noteworthy is the lack of resettlement into the large urban centres of Channel-Port aux Basques, Corner Brook, Gander, and Grand Falls-Windsor. Regarding the overall trend again, the years 1967-68 and 1969-70 showed a divergence from an otherwise steadily increasing trend.

Table 5.4 summarizes resettlement into the eight major and seventeen other fishery growth centres designated by the provincial government in 1967 (Figure 2.1).

The results are surprisingly low considering the emphasis placed on directing movement into these centres. Except for the low proportion in 1969-70 and high in the following year there was a trend of a gradual increase in the share received. In terms of areal distribution, eight of the twenty-five centres or 32% located on the South Coast of the province from Channel in the west to Marystown in the east received 59.5% of the 944 resettled households.

Summarizing briefly, household resettlement into the three classified types of centres has been low for the total period. Except in the case of the identified growth

TABLE 5.3

RESETTLEMENT INTO THE IDENTIFIED GROWTH CENTRES

Centre	Years 1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total	Percentage of Total Resettlement
St. John's	2	27	76	82	36	13	21	257	6.6
Gander	-	2	4	6	6	-	4	22	0.6
Corner Brook	-	-	2	7	9	13	4	35	0.8
Grand Falls-Windsor	-	3	1	3	7	5	-	19	0.5
Marystown	-	7	13	30	30	16	8	104	2.6
Clarenville	1	5	6	9	6	3	2	32	0.8
Channel-Port aux Basques	-	2	4	7	3	11	1	28	0.7
Grand Bank	2	6	19	26	18	14	3	80	2.3
Stephenville	-	1	6	31	63	30	17	148	3.8
Baie Verte	-	-	-	4	13	7	1	25	0.6
Bay Roberts	-	-	1	-	1	-	-	2	0.1
Carbonear	5	5	13	5	4	10	5	47	1.2
Lewisporte	2	4	11	11	13	4	3	48	1.2
St. Anthony	-	2	14	8	22	6	5	57	1.4
Placentia-Freshwater	-	25	82	41	1	3	-	152	3.8
Labrador City	-	1	-	3	4	1	2	11	0.3

TABLE 5.3 (Continued)

Centre	Years 1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total	Percentage of Total Resettlement
Happy Valley-Goose Bay	6	-	63	12	30	11	8	130	3.4
Deer Lake	-	-	2	8	7	7	-	24	0.6
Springdale	-	-	-	8	12	6	2	28	0.7
Bonavista	-	2	12	4	1	1	3	23	0.6
Total for Each Year	18	80	322	305	286	161	89	1261	-
Percentage of Total Resettlement	16.5	17.2	35.0	34.8	32.8	38.2	42.0	32.5	

TABLE 5.4

RESETTLEMENT INTO THE FISHERY GROWTH CENTRES

Major Fishery Growth Centres	Years 1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total Period	Percentage of Total Resettlement
Burin	1	15	6	13	14	2	-	51	1.4
Fermeuse	-	-	1	-	-	-	-	1	0.1
Fortune	-	3	24	30	18	6	7	88	2.3
Grand Bank	2	6	19	26	18	14	3	88	2.3
Harbour Breton	3	3	31	28	15	54	6	140	3.6
Harbour Grace	-	2	4	3	-	2	-	11	0.2
Marystown	-	7	13	30	30	16	8	104	2.6
Trepassey	1	2	5	20	7	3	1	39	1.0
Total for Each Year	7	38	103	150	102	97	25	522	
Percentage of Total Re-settlement	6.5	8.2	11.2	17.1	11.8	23.0	11.8	13.5	

TABLE 5.4 (Continued)

Other Fishery Growth Centres	Years 1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total Period	Percentage of Total Resettlement
Bonavista	-	2	12	4	1	1	3	23	.6
Burgeo	-	10	9	10	11	18	5	63	1.6
Carbonear	5	5	13	5	4	10	5	47	1.2
Catalina	-	1	7	10	-	-	-	18	.5
Channel	-	-	1	2	-	1	-	4	.1
Englee	4	18	16	10	9	9	-	66	1.7
Fox Harbour	-	2	2	1	-	-	-	5	.1
La Scie	-	1	8	20	10	4	1	44	1.1
Old Perlican	-	-	1	-	-	-	-	1	.1
Port aux Basques	-	2	3	5	3	10	1	24	.6
Part aux Choix	-	-	9	6	12	6	12	45	1.1
Port Union	-	-	-	-	-	-	1	1	.1
River Head	-	2	2	1	-	-	-	5	.1
St. Anthony	-	2	14	8	22	6	5	57	1.5
St. Mary's	-	-	-	-	-	-	-	0	0
Twillingate	-	-	5	6	2	1	2	16	.4
Valleyfield	-	1	-	-	1	-	1	3	.1
Total for Each Year	9	46	102	88	75	66	36	422	
Percentage of Total Resettlement	8.3	9.9	11.1	10.1	8.7	15.7	17.0	10.9	

centres and the fishery growth centres where a few of the centres received substantial resettlement, in particular St. John's, Stephenville, Placentia, Happy Valley Harbour Breton, Marystown, Fortune and Grand Bank respectively, generally a pattern of dispersed low proportions was evident. The overall trend consisted of increasing proportions received in all categories except for low proportions experienced in 1969-70 and in some cases in 1971-72. The urban centres and identified growth centres experienced significantly higher proportions in 1967-68, while all the centres received higher proportions in 1970-71.

Section C. Distance Measurements

The purpose of this section is to determine the nature and trends in resettlement distances. Two relative or functional distance measurement techniques are utilized, the Olsson centre size to centre size method (Olsson, 1965) and a Transaction Flow Model (Savage and Deutsch, 1960). The Olsson technique is applicable to this research, because it reflects the relationship between size of sending and receiving centres, which is of utmost importance in the Resettlement Programs. That relationship, summarized briefly, is the encouragement of movement out of small isolated settlements into larger centralized centres. The Transaction Flow Model affords the opportunity to identify strong significant flows within the maze of resettlement

movement.

The concern with relative measurements in this thesis reflects the increasing emphasis in Geography and other related disciplines for functional types of distance analysis. Richardson suggests that the "selection of the distance measure will vary according to the problem studied. In many cases, more sophisticated measures than minimum geographical distance will yield more precise results" (Richardson, 1969, 99). Various types of relative and functional distance measures including economic, social and communication indices have been suggested to replace the use of absolute physical distance (Deutsch and Isard, 1961, 308). As Abler appropriately remarks, "Space and distance have never been absolutes, but they are certainly much less so today than they have ever been before" (Abler, 1971, 15).

Olsson, in his study of migration patterns in Sweden, offered several reasons for replacing absolute physical distance measures with functional types. These included the problem of comparing distances amongst areas of different areal sizes, the observation that migrants from different parts of Sweden viewed physical distance differently, and finally the realization that existing location theories assume relative, not absolute, location (Olsson, 1965, 9). He suggested, for example, that there is a relationship between migration distance and the sizes of sending and receiving centres, "since larger places are

located farther apart than smaller ones". He hypothesised that "migrants from small places move shorter distances than migrants from large places" (Olsson, 1965, 29). Olsson's findings indicated that the larger destination centres increased in relative importance with the size of the origin centres. Herrick, in a Newfoundland study based on a sample of 400 households in 80 communities, found a similar relationship, in that "for families, the distance moved is very much affected by the size of the community they are moving from ... the smaller the community - the shorter the distance they are likely to move" (Herrick, 1971, 24).[2]

Table 5.5 indicates the results of the distribution of resettlement by sending-receiving centres size for the total period. There is some evidence that a similar relationship as Olsson found exists. Sending centres above 200, for example, sent higher proportions of their households to centres greater than 1000 than did centres below 200. However, at the same time sending centres greater than 200 sent, in several instances, higher proportions of their households to places below 1000 than did the smallest sending categories. It is interesting to note that sending centres of greater than 500 sent 7.3% of their households to places of less than 500 and 29.0% to places of less than 1000.

---

[2]Herrick's sample did not necessarily consist of households assisted under the Household Resettlement Programs.

TABLE 5.5

PERCENTAGE DISTRIBUTION OF RESETTLEMENT BY CENTRE SIZE

TOTAL PERIOD

	Receiving Centres					
Sending Centres	< 500	501 1000	1001 2000	2001 5000	5001 10,000	> 10,000
< 100	33.8	20.4	17.3	19.8	3.8	4.9
101-200	31.9	10.3	34.3	11.2	5.2	7.0
201-300	39.1	13.7	23.1	7.8	7.2	9.1
301-400	38.3	8.5	26.4	11.4	4.0	11.4
401-500	2.4	3.5	10.6	54.1	21.2	8.2
> 500	7.3	21.7	23.1	29.6	7.7	10.6

There is, therefore, a lack of any perfect increasing centre size to centre size relationship. This result is consonant with the finding in the previous section that there was a high proportion of movement originating and terminating in small centres. The fact that the larger sending centres also sent higher proportions of their households to relatively small reception centres combines with these findings to indicate generally short distance movement during the total period.

There were trends indicated, however, towards larger size sending and receiving centres during the seven year period. This would imply greater migration distances based on the assumption that the larger centres are spaced further apart. Figure 5.4 indicates a rather complicated fluctuating situation in the changing relationship between the various sending and receiving size categories. There are some trends in evidence. If, for example, the changing proportion of movement into urban centres is used as a guideline, and if fluctuations such as occurred during 1969-70 are ignored in some cases, all sending categories except the 301-400 and 401-500 groups increased their proportion steadily during the period. Also, discounting some fluctuations during 1969-70 and 1971-72 again, it can be seen that for the smallest sending groups up to 300 population, there has been a steady decline in movement into the less than 500 group and a steady increase into the

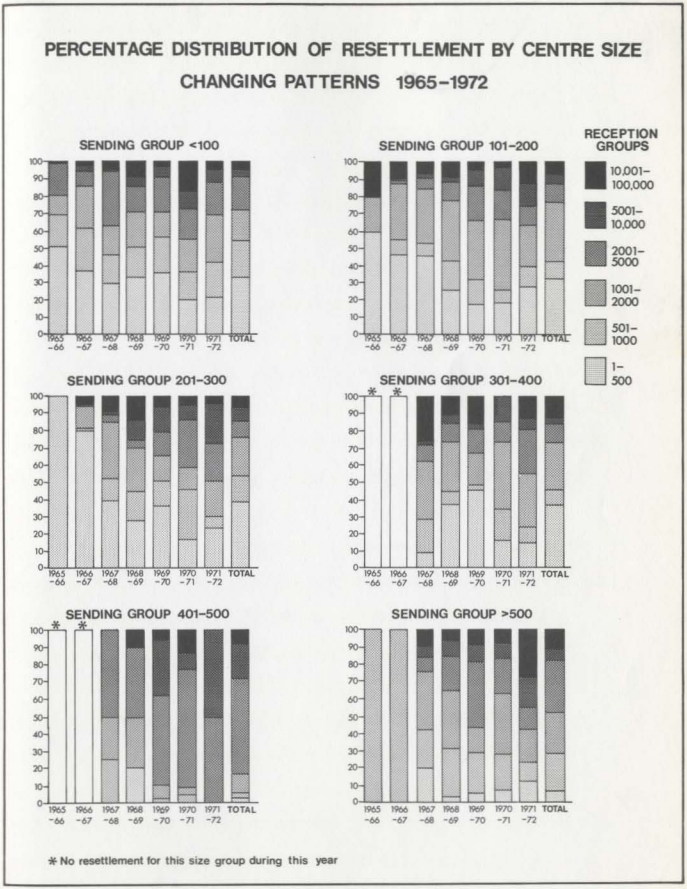

PERCENTAGE DISTRIBUTION OF RESETTLEMENT BY CENTRE SIZE
CHANGING PATTERNS 1965-1972
SENDING GROUP <100
SENDING GROUP 101-200
SENDING GROUP 201-300
SENDING GROUP 301-400
SENDING GROUP 401-500
SENDING GROUP >500
RECEPTION GROUPS
10,001-100,000
5001-10,000
2001-5000
1001-2000
501-1000
1-500
1965-66
1966-67
1967-68
1968-69
1969-70
1970-71
1971-72
TOTAL
* No resettlement for this size group during this year

Figure 5.4

5,001-10,000 receiving group. However, while there are indications of changing distance, the continuing high proportion of movement into the smaller reception centres would suggest a large number of centres and relatively short distance moves. Table 5.6 supports the first conclusion.

This proliferation of reception centres, relatively low sending/reception centre ratio and similarly low household per reception centre index suggest a spatially dispersed resettlement pattern with lack of concentration into a few selected centres, which implies short distance movement. To support this conclusion and also to provide a census division scale measurement of distance to complement the centre size to centre size approach the Transaction Flow Analysis Model is used.

This technique, developed by Savage and Deutsch (1960), has been employed by political scientists primarily in analyzing various flow data including international trade and diplomatic exchanges for such purposes as determining indices of political integration. It has received relatively little attention by geographers. Soja applied it using long distance telephone calls in East Africa to determine changes in the degree of territorial integration between Kenya, Tanganyika, and Uganda (Soja, 1968). Roseman postulated that certain south - north migration flows in the United States were

TABLE 5.6

RATIO OF SENDING TO RECEPTION CENTRES AND HOUSEHOLDS PER RECEPTION CENTRE

1965-1972

Type	1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972
Sending Centres	21	59	174	203	238	159	89
Reception Centres	47	108	166	162	162	111	71
Sending/Reception Centre Ratio	.45	.55	1.05	1.26	1.47	1.44	1.26
Households Resettled	109	466	919	877	871	422	212
Households per Reception Centre	2.32	4.32	5.54	5.42	5.38	3.81	2.99

"channelized" due to bias in information flows and family-kinship ties between the points of origin and destination (Roseman, 1971). It has also been utilized in the examination of international tourist flows (Williams and Zelinsky, 1970).

The basic assumption of the model is origin-destination independence or indifference. There are no a priori reasons for interaction between two components in a system except for the general attractive power of the individual places or elements. The attractiveness of a centre or area can be measured as that proportion of all transactions in a closed system that it received. For example, if census division 1 received 10% of all resettled households, occurring within the closed system, the assumption is that each other division originating re-settlement would direct 10% of its respective moves to division 1. Absolute flows and generators of largest flows are established from empirical evidence. Thus the model's primary function is not to predict flows but rather "to indicate the deviations of the actually observed values from a generalized standard" (Lijphart, 1964, 253), so that the effects of variables such as size of components, distance, and community of interest factors can be ascertained later.

The model, therefore, has the advantage over other spatial interaction models such as gravity and potential types by not initially incorporating size and distance factors.

Interaction beyond the generalized standard or "threshold level" is known as salience, which Soja described for his purposes as, "the greater than expected flow of information which is an indication of mutual awareness" (Soja, 1968, 43). Brams, in determining the inter-relationship between countries in the international system maintains,

> Two countries are somehow related or salient to each other when they are not indifferent to each other's behavior. We assume that for two countries to pass above a threshold of indifference and be salient to each other, a certain level of communication must exist between them (Brams, 1966, 882).

Salience occurs between two components and normally refers to the destination as being salient to the origin, i.e., if the direction of flow is A to B, and is greater than expected, then B is salient to A. In the case of two-way flow, it is accepted that for two components to be highly interdependent, salience must be mutual, that is, flows in both directions must be above the established threshold level. Even where only one-way flow is involved, e.g., resettlement movement, the notion of mutual awareness is pertinent, especially in resettlement based on kinship

or denominational ties, etc. Knowledge, however, of the reception centre only is necessary for resettlement to occur, particularly those moves made in the direction of new job and service opportunities.

There are two types of salience measures, both designed to reflect the actual and expected flow situation by a single index. The first is the Relative Deviation Index or Relative Acceptance of component j for component i's transactions (RAij). It is calculated as follows:

$$RAij = \frac{Aij - Eij}{Eij}$$

where Aij is the actual flow from i to j and Eij is the expected flow based on the assumption that i will send to j that proportion of its originating transactions equal to the proportion j received of all transactions in the system. Positive or negative RAij's indicate greater than or less than expected flow. When the positive RAij exceeds a predetermined threshold level, j is considered salient to i.

This relative type of index has the limitation of being overly sensitive to greater than expected flows from areas originating low proportions of transactions. For example, if in one case Aij = 5, Eij = 4, then RAij = .25. In a second instance when Aij = 50, Eij = 40, RAij again equals .25 even though there is much greater absolute flow than in the first case.

One method employed to offset this sensitivity problem of the relative index is to incorporate an Absolute Deviation Index, where Dij = Aij - Eij. This index is conversely sensitive to greater than expected flows involving larger flow. Normally, for salience to exist, both the RA and D indices must exceed their respective threshold levels. All the cited works used arbitrarily determined threshold levels. In discussing this limitation, Brams notes that,

> Although Savage and Deutsch suggest statistical procedures for determining significant RA's these involve assuming a common consignment size for the flow between all pairs of countries which seems a no less arbitrary procedure than that used here to determine salience (Brams, 1966, 885).

The method applied in this analysis involves calculating the median of the positive RA and D indices. This has the benefit of some statistical basis. Since there was found to be a great range of RA and D indices with a few very high values, the arithmetic mean size proved non-representative. The median of the total range provides in this situation a better measure of the central tendency of the indices. It also avoids the unwarranted decision to consider all positive RA and D indices as being signifigant, since the problem being examined is the nature of the bulk of resettlement flow.

In addition to the relative and absolute salience measures of inter-census division flow, an overall percentage discrepancy (Pi) index is computed. This is a variation of the chi-squared "goodness-of-fit" statistic. The index represents the percentage of transactions that would have to be changed to make actual flow meet expected flow perfectly.

The overall percentage discrepancy index is calculated as follows:

$$Pi = \sum_{i=1}^{n} \sum_{j=1}^{n} \frac{50 \left| dij \right|}{\sum_{i=1}^{n} \sum_{j=1}^{n} Aij}$$

The range of Pi is from 0 to 100. A low value would indicate that the actual and expected flow were equal or in other words no salient flows. Conversely, a high value signifies considerable divergence from the actual-expected situation meaning either a large number of low value or a small number of very high value salient flows.

The following tables and figures develop the salience and discrepancy indices by census division for household resettlement for the total period. Table 5.7A is the actual household resettlement, Table 5.7B the expected flow, 5.7C and D, the RA and D indices respectively. Figure 5.5 shows cartographically the actual flow patterns.

TABLE 5.7 A-D

ACTUAL HOUSEHOLD RESETTLEMENT BY CENSUS DIVISION FOR TOTAL PERIOD

(A)

Receiving/ Sending	1	2	3	4	5	6	7	8	9	10	Total	Percent Sent of Provincial Total
1	176	28	0	0	0	5	2	1	0	3	226	5.8
2	736	439	11	3	3	2	18	1	3	4	1220	31.5
3	15	101	389	14	1	1	2	0	0	1	524	13.5
4	0	0	1	255	10	0	0	1	1	1	269	6.9
5	14	0	1	1	16	0	0	3	0	1	36	0.9
6	6	0	0	4	0	39	7	3	0	1	60	1.6
7	88	13	3	1	13	24	234	6	2	6	390	10.1
8	27	16	1	5	6	39	13	328	9	8	452	11.6
9	17	1	0	16	33	0	0	52	350	29	498	12.9
10	8	0	0	0	11	1	0	2	5	174	201	5.2
Division Total Received	1087	608	406	300	93	111	276	397	370	228	3876	-
Percent Received of Province Total	28.1	15.6	10.4	7.7	2.4	2.8	7.2	10.3	9.6	5.9		100.00

TABLE 5.7 (Continued)

EXPECTED HOUSEHOLD RESETTLEMENT BY CENSUS DIVISION FOR TOTAL PERIOD

(B)

Receiving/Sending	1	2	3	4	5	6	7	8	9	10
1	64	35	24	17	6	6	16	23	22	13
2	343	190	126	93	28	33	87	125	116	71
3	146	82	55	40	13	14	38	54	50	31
4	76	41	28	21	7	8	19	28	26	16
5	10	6	4	3	1	1	3	4	4	2
6	17	9	6	5	2	2	4	6	6	4
7	110	61	41	30	9	11	28	40	38	23
8	127	71	47	35	11	13	33	47	43	27
9	140	78	52	38	12	14	36	51	48	29
10	57	31	21	16	5	6	15	21	19	12

TABLE 5-7 (Continued)

RA INDEX BY CENSUS DIVISION FOR TOTAL PERIOD

(C)

Receiving/Sending	1	2	3	4	5	6	7	8	9	10
1	1.75	.09	-1.00	-.95	-1.00	-.17	-.88	-.96	-1.00	-.77
2	1.15	1.31	-.92	-.97	-.90	-.94	-.80	-.99	-.98	-.95
3	-.90	.24	6.08	-.65	-.93	-.93	-.95	-1.00	-1.00	-.97
4	-1.00	-1.00	-.97	11.15	.43	-1.00	-1.00	-.97	-.97	-.94
5	.40	-1.00	-.75	-.67	15.00	-1.00	-1.00	-.25	-1.00	-.50
6	-.53	-1.00	-1.00	-.20	-1.00	18.50	.75	-.50	-1.00	-.75
7	-.20	-.79	-.93	-.97	.45	1.19	7.36	-.85	-.95	-.74
8	-.79	-.91	-.98	-.86	-.46	2.00	-.61	5.98	-.79	-.71
9	-.88	-.99	-1.00	-.58	1.75	-1.00	-1.00	.02	6.30	0
10	-.86	-1.00	-1.00	-.32	1.20	-.84	-1.00	-.91	-.74	13.5

TABLE 5.7 (Continued)

D INDEX BY CENSUS DIVISION FOR TOTAL PERIOD

(D)

Receiving/Sending	1	2	3	4	5	6	7	8	9	10
1	112	3	-24	-16	-6	-1	-14	-22	-22	-10
2	393	249	-115	-90	-25	-31	-69	-124	-113	-67
3	-131	19	334	-26	-12	-13	-36	-54	-50	-30
4	-76	-41	-27	234	3	-8	-19	-27	-25	-15
5	4	-6	-3	-2	15	-1	-3	-1	-4	-1
6	-9	-9	-6	-1	-2	37	3	-3	-6	-3
7	-22	-48	-38	-29	4	13	206	-34	-36	-17
8	-100	-55	-46	-30	-5	26	-20	281	-34	-19
9	-123	-77	-52	-22	21	-14	-36	1	302	0
10	-49	-31	-21	-5	6	-5	-15	-19	-14	162

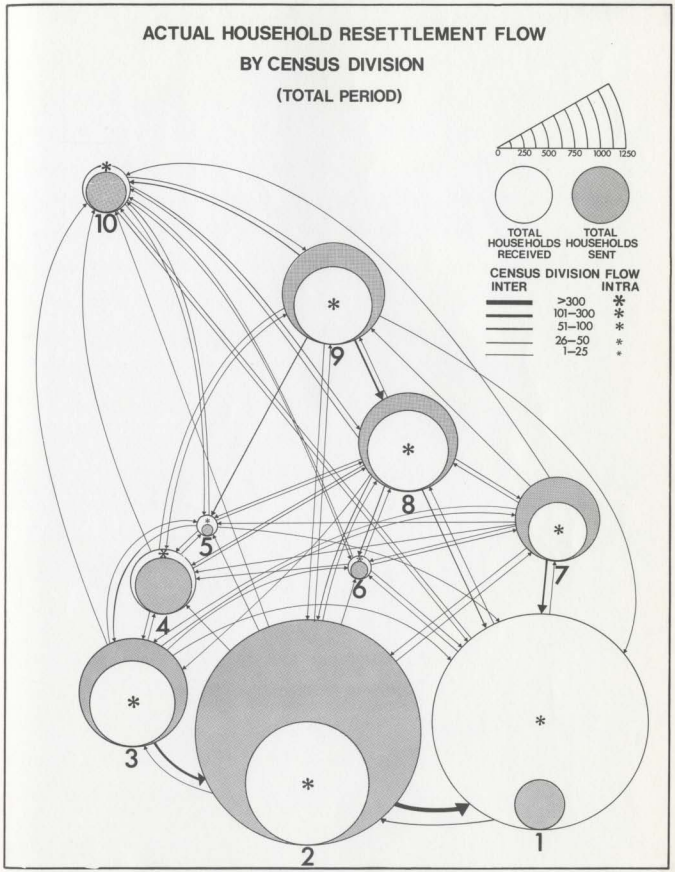

ACTUAL HOUSEHOLD RESETTLEMENT FLOW
BY CENSUS DIVISION
(TOTAL PERIOD)
0 250 500 750 1000 1250
TOTAL HOUSEHOLDS RECEIVED
TOTAL HOUSEHOLDS SENT
CENSUS DIVISION FLOW
INTER
INTRA
>300
101–300
51–100
26–50
1–25
10
9
8
7
6
5
4
3
2
1

Figure 5.5

Summarizing the actual flows, several general observations can be made. There are 100 possible cells of transaction, 76 of which are occupied, that is, have received households. It can be concluded that resettlement is occurring generally throughout the provincial system. The highest receiving and sending census divisions were 1 and 2 respectively. The lowest in both cases was census division 5. If the arithmetic mean of 10% is taken as a dividing line for both receiving and sending proportions, the census divisions can be grouped into four categories:

Receiving	Sending	Census Division
Low	Low	4, 5, 6, 10
Low	High	7, 9
High	Low	1
High	High	2, 3, 8

Resettlement is mostly intra-census division. Each census division, except 1, 5, 6, received the highest proportion of its resettled households from within the division. These proportions ranged from a low of 72.2% for census division 2 to a high of 95.8% for division 3. In all, 61.9% of the resettled households remained within their own census division.

Table 5.7B presents the expected flow. For example, Cell 2 down 1 across, indicates 343 expected households.

This figure is derived from multiplying 1220 (total resettled households originating in census division 2) by 28.1% (proportion of all resettled received by census division 1).

Tables 5.7C and D indicate the calculated RA and D indices respectively. There are only 23 cells with positive RA and D values. Intra-census division movement accounted for 10 of these flows while 7 of the remaining 13 were between contiguous census divisions.

However, if flows are considered to be salient at some higher established threshold level, larger and hence more representative flows can be identified. For this purpose the median values of 1.15 and 21.0 for RA and D respectively were calculated. As shown in Figure 5.6 there were 12 salient flows equal to or greater than the threshold levels. Intra-census division movement accounted for 9 of the flows. The one exception was census division 5 which failed to meet the D index. This was the lowest sending and receiving division as noted earlier. All 3 of the remaining were between contiguous census divisions, 2 to 1, 9 to 5, and 8 to 6.

Figure 5.7 indicates that there have been no significant deviations from this intra and contiguous census division pattern during the seven year period except for the case of division 7 to 1 during 1967-68, 1969-70 and 1971-72.

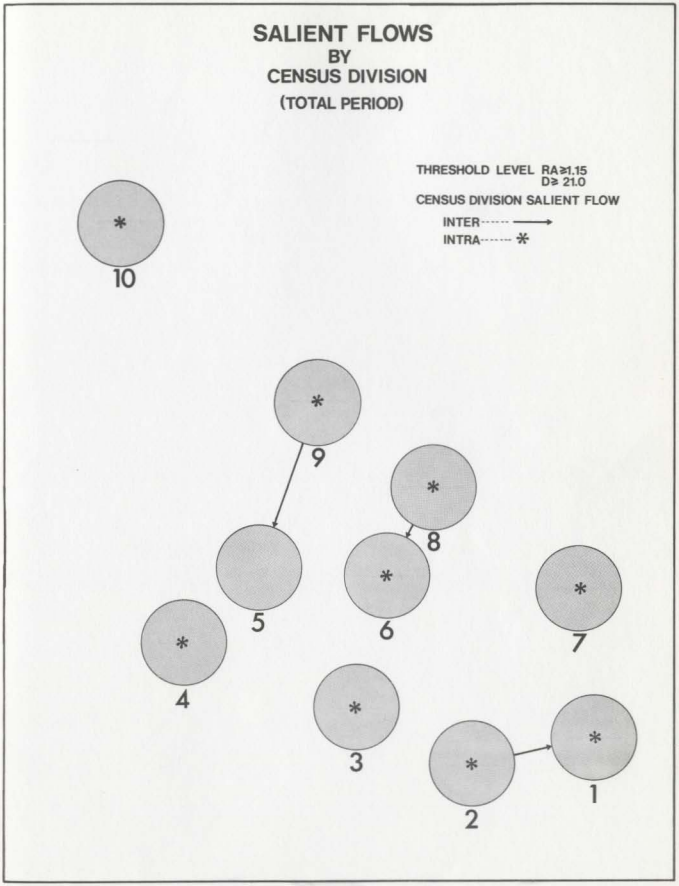

SALIENT FLOWS
BY
CENSUS DIVISION
(TOTAL PERIOD)
THRESHOLD LEVEL RA≥1.15
D≥ 21.0
CENSUS DIVISION SALIENT FLOW
INTER
INTRA
10
9
8
5
6
7
4
3
2
1

Figure 5.6

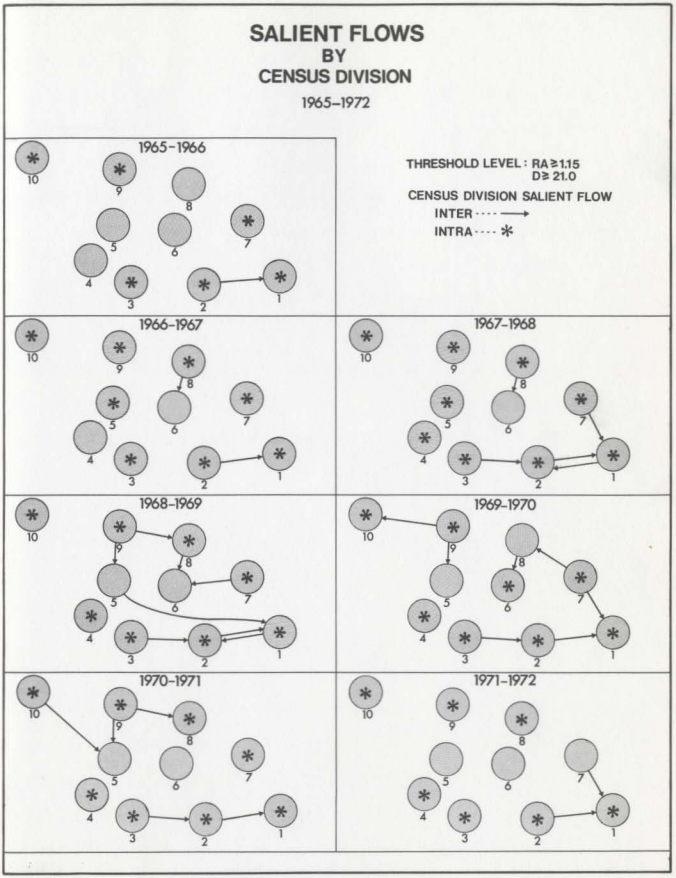

SALIENT FLOWS
BY
CENSUS DIVISION
1965–1972
1965–1966
1966–1967
1967–1968
1968–1969
1969–1970
1970–1971
1971–1972
THRESHOLD LEVEL : RA ≥ 1.15
D ≥ 21.0
CENSUS DIVISION SALIENT FLOW
INTER
INTRA

Figure 5.7

Table 5.8 shows the annual pattern of the overall percentage discrepancy index (Pi).

As noted previously, the range of Pi is 0 to 100. A low value means little divergence in the actual-expected situation. This combined with the observed uneven distribution of resettlement by census division throughout the province would imply longer distances but no significantly strong flows. For example, all remaining census divisions would have had to send at least 28.1% of their resettled households to division 1. A high Pi value means a high amount of deviation in the model suggesting concentration of resettlement households into a very few census divisions from all over the province or a large number of inter-census division salient flows.

The results indicate that neither of these extreme cases existed nor were there any trends in either direction. The approximately 40% divergence in the model indicates a small number of salient flows which in fact, as the salience indices revealed, were local or intra-census division.

These results substantiate the implications and complement the findings of the Olsson technique. While there have been some trends towards and between larger places, and a few longer distance salient flows during the seven year period, the overall pattern has been one of predominantly short distance movement into relatively small size reception centres.

TABLE 5.8

PI INDEX

1965-1972

Year	1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total Period
Pi Index	43.0	39.3	41.6	41.4	43.4	42.8	42.0	42.1

Section D. Accessibility Analysis.

Summarizing the results of household resettlement during the study period, in terms of response to census division characteristics, size and type of reception centre, and patterns of salient flows, the spatial 'success' of the programs appears doubtful. One method of examination remains, however, before any final evaluation can be made. This method involves tabulating the proportion of total households which moved within accessible distances of the urban and identified growth centres. A 45 minute potential commuting distance was assumed in Chapter I in the derivation of an index of marginality. This measure is utilized once again to indicate accessibility. This approach is useful as it avoids evaluating resettlement just in terms of movement into certain centres and recognizes the importance of situation or relative location. Movement close to a centre is considered just as "successful" as movement into an actual centre. Included in this areal examination is resettlement into the DREE Special Areas.

Figure 5.8 summarizes movement into the DREE Special Areas and potential commuting zone of urban centres and the identified growth centres, including the centres themselves. For convenience and comparison resettlement into the urban and growth centres has been also repeated separately from Figure 5.1.

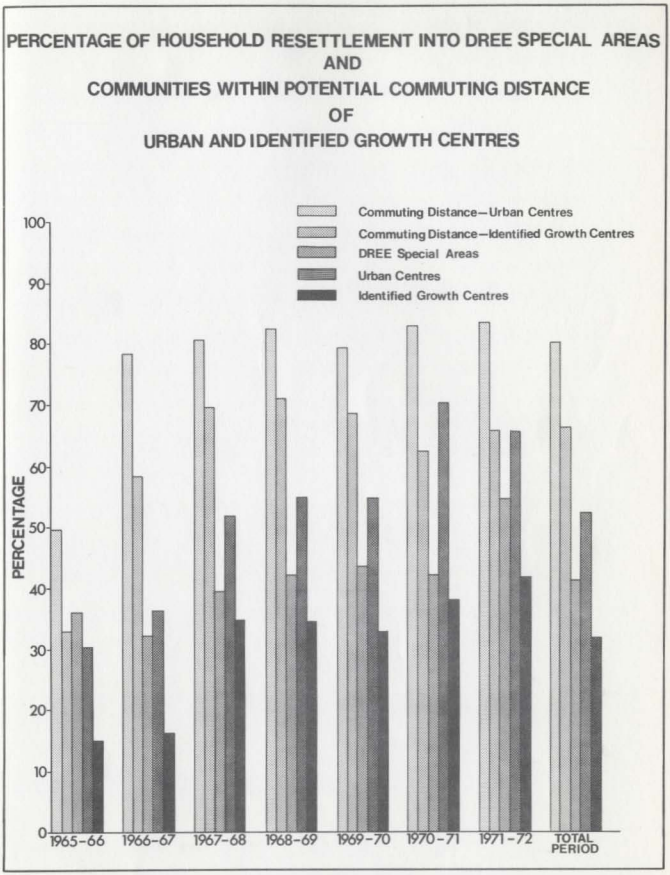

PERCENTAGE OF HOUSEHOLD RESETTLEMENT INTO DREE SPECIAL AREAS
AND
COMMUNITIES WITHIN POTENTIAL COMMUTING DISTANCE
OF
URBAN AND IDENTIFIED GROWTH CENTRES
Commuting Distance—Urban Centres
Commuting Distance—Identified Growth Centres
DREE Special Areas
Urban Centres
Identified Growth Centres
PERCENTAGE
100
90
80
70
60
50
40
30
20
10
0
1965-66
1966-67
1967-68
1968-69
1969-70
1970-71
1971-72
TOTAL PERIOD

Figure 5.8

Not surprisingly, resettlement into communities within the potential commuting distance of urban centres (including movement into the urban centres) is the largest component at 80.0% for the total period. While this represents a substantial increase over the 53.4% into the urban centres only, one in five households remained isolated according to the criterion adopted. In addition, movement into the surrounding communities has continually been less than that into the urban centres except during 1966-67. For the identified growth centres the proportion doubled to 66.4% from 32.5%. In this case, except for the last two years, movement into the surrounding communities was greater than that into the growth centres. Resettlement into the DREE Special Areas was surprisingly low considering that in some cases their designation was based on supposedly significant pre-1970 resettlement trends. Since 1970, however, there has been a significant increase in the proportion from 43.4% in 1970-71 to 54.7% in 1971-72.

Regarding the trends in general, movement into the commuting range of urban and growth centres accelerated in proportion in 1966-67, one year before the significant increase into the actual urban and growth centres. An increasing trend continued until 1969-70 when a slight drop occurred. During the last year the proportions have been increasing once more.

Table 5.9 provides an analysis of resettlement within commuting range of the various size urban centres. It should be noted that when a resettled household had access to several urban centres in more than one size category, the largest category was used. This would explain, for example, why, although reception centre size category 1001-2000 received 23.9% of the households (Figure 5.2), only 12.5% of the households moved within the commuting range of this category. This means that some of the resettlement into the 1001-2000 group is recorded as being accessible to larger size urban centres. Regarding these larger centres, while resettlement into centres of greater than or equal to 2000 constituted 29.5% of the period total (Figure 5.2), movement within the commuting range rose to 67.5%. The highest proportion of resettlement was into the commuting range of the group of greater than or equal to 2000 for all years (Table 5.9). This means that these larger centres were becoming accessible to increasing proportions of the resettled households.

Table 5.10 provides a detailed summary of resettlement into the identified growth centres and communities within potential commuting distance. One method of categorizing these results while providing a comparison to movement into the actual growth centres is as follows: The average percentage of total resettlement for the growth centres (Table 5.3) was 1.6% (32.5% divided by 20). The centres are

TABLE 5.9

HOUSEHOLD RESETTLEMENT INTO COMMUNITIES WITHIN

POTENTIAL COMMUTING DISTANCE OF URBAN CENTRES

Urban Centre Size	1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total Period	Percentage of Total Resettlement
1,001-2,000	11	96	110	94	107	48	19	485	12.5
2,001-5,000	37	175	429	351	214	139	57	1402	36.2
5,001-10,000	1	49	97	168	308	114	66	803	20.7
> 10,000	5	47	100	113	65	48	34	412	10.6
Total for Each Year	54	367	736	726	694	349	176	3102	-
Percentage of Total Resettlement	49.6	78.8	80.1	82.8	79.7	82.7	83.1	80.0	

TABLE 5.10

HOUSEHOLD RESETTLEMENT INTO COMMUNITIES WITHIN POTENTIAL COMMUTING DISTANCE OF IDENTIFIED GROWTH CENTRES

Centre	1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total Period	Percentage of Total Resettlement
St. John's	3	40	86	96	43	32	27	328	8.6
Gander	0	2	14	15	17	0	7	54	1.4
Corner Brook	0	6	13	39	30	24	7	119	3.1
Grand Falls/Windsor	0	4	5	13	17	10	9	59	1.5
Marystown	1	41	69	88	80	30	10	320	8.3
Clarenville	4	56	92	64	28	11	7	263	6.7
Channel/ Port aux Basques	1	2	8	10	6	19	5	51	1.3
Grand Bank	2	10	37	66	39	20	10	184	4.7
Stephenville	0	1	8	43	151	52	27	284	7.3
Baie Verte	0	4	3	23	19	10	1	51	1.3
Bay Roberts	2	9	4	5	6	5	0	31	0.8
Carbonear	13	12	18	8	4	13	8	77	2.0
Lewisporte	4	8	15	4	14	4	3	52	1.3
St. Anthony	0	2	17	9	22	6	5	61	1.6
Placentia (Freshwater)	1	70	163	91	64	4	0	395	10.2

TABLE 5.10 (Continued)

Centre	1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total Period	Percentage of Total Resettlement
Labrador City	0	2	2	3	5	2	2	16	0.4
Happy Valley	6	0	63	12	30	11	8	131	3.4
Deer Lake	0	0	2	8	7	7	0	24	0.6
Springdale	0	1	1	11	12	6	2	33	0.8
Bonavista	0	3	19	14	1	1	3	41	1.1
Total for Each Year	37	273	639	622	595	267	141	2574	-
Percentage of Total Resettlement	33.9	58.6	69.5	70.9	68.3	63.3	66.5	66.4	

divided accordingly into High Receiving (greater than 1.6%) and Low Receiving (less than 1.6%). Resettlement into the growth centres and surrounding communities increased to 66.4% of total resettlement from 32.5% for growth centres only, representing a 100% increase approximately. Centres in Table 5.10 are divided, therefore, into Low Increase less than 100% and High Increase greater than 100%. The growth centres are then classified, based on these criteria, into four groups.

	Low Increase 100%	High Increase 100%
	A	B
Low Receiving 1.6%	Channel, Lewisporte, Carbonear, Labrador City, St. Anthony, Deer Lake, Springdale, Bonavista.	Gander, Corner Brook, Clarenville, Baie Verte, Bay Roberts, Grand Falls
	C	D
High Receiving 71.6%	St. John's, Stephenville, Happy Valley	Marystown, Grand Bank, Placentia.

Establishing exact individual reasons for these results is beyond the scope of the present study. Available housing, land values, and employment opportunities, represent three general factors requiring examination. The inability, for example, of centres in group A to attract the resettled households needs investigation. In contrast, is the continued positive performance of the South Coast centres in group D and improvement in the urban

centres of group B.

Several final statistics regarding the relationship between resettlement and the potential commuting range should be noted before examining the DREE Special Areas. Not all resettlement originated outside the commuting range. For the total period, 814 of the 3876 resettled households (20.9%) originated within the commuting distance of the urban centres and 490 (12.6%) within the range of the identified growth centres. In terms of the number of sending centres, 144 were within the commuting range of urban centres and 90 within that of the identified growth centres representing 31.7% and 19.8% respectively. The intermediate centres, that is the receiving centres which later became sending, accounted for 41 of these 144 centres (39.9%).

The final table to be examined is resettlement into the DREE Special Areas. The continuing improvement in the attraction of the Areas and in particular the last year should be evaluated perhaps against the fact that for six of these Areas their initial designation was based partly on supposedly high pre-1970 resettlement and were Areas into which resettlement would "continue" to be encouraged. These six Areas, all except St. John's and Corner Brook, have only accounted for 29.6% of total resettlement for the seven years. Unevenness in the distribution can be recognized considering that the St. John's, Burin and

TABLE 5.11

HOUSEHOLD RESETTLEMENT INTO DREE SPECIAL AREAS

Special Area	1965 1966	1966 1967	1967 1968	1968 1969	1969 1970	1970 1971	1971 1972	Total Period	Percentage of Total Resettlement
St. John's	13	44	108	109	52	42	33	401	10.4
Corner Brook	0	0	5	11	13	16	7	52	1.4
Burin	11	45	90	123	92	40	19	420	10.8
Happy Valley	7	0	63	12	30	15	8	135	3.4
Come By Chance	0	44	48	43	14	3	3	155	4.0
Grand Falls/ Gander	3	13	23	26	30	10	8	113	2.9
Stephenville	0	1	7	40	135	50	23	256	6.6
Hawkes Bay	6	8	18	7	13	7	15	74	1.9
Total for Each Year	40	155	362	371	379	183	116	1606	-
Percentage of Total Resettlement	36.7	33.3	39.4	42.3	43.5	43.4	54.7	41.4	

Stephenville Areas accounted for 27.8% of the 41.4%, leaving 13.6% to be distributed amongst the remaining five Areas.

In general, this accessibility analysis sheds a more favourable light on the resettlement results. While not representing a high degree of centralization into a few selected centres, there are trends towards concentration on an area basis. For example, and of particular significance to this thesis, 80% of the resettled households moved within commuting distance of the seventy-five urban centres and 66.4% moved within range of the twenty identified growth centres.

In summary, the results of the four types of examination have revealed similar and complementary results. There was little correlation between resettlement and a series of push-pull factors at the census division scale. Along with primarily intra-census division salient flows, movement was mainly between relatively small sending and receiving centres. These two characteristics reflect a series of short distance moves, with a few exceptions, such as resettlement from census division 7 to 1. The majority of resettlement occurred within and into census divisions 2, 3, and 1 respectively. Conversely, little resettlement took place in census divisions 4, 5, and 6. While the census divisions experiencing resettlement corresponded with those containing the fishery growth centres, there was very little resettlement (24.4%) into the actual centres.

The twenty identified growth centres received a significant proportion of resettlement (32.5%) when compared to the seventy-five urban centres (53.4%) and the fishery growth centres (24.4%). The temporal and accessibility analyses revealed there were trends of movement into and towards larger centres. Significant increases in proportions received in the centres and areas examined in 1967-68 and 1970-71 and decreases in 1969-70 were recorded in most cases. Finally, situations existed whereby in some instances, resettled households remained in marginal areas (beyond the 45 minute commuting range) and in other instances originated within accessible areas.

The question arises whether these results comply with the objectives of the Resettlement Programs and with an appropriate growth centre strategy. It is against this background that the resettlement patterns should be interpreted and implications drawn for future resettlement and growth centre planning. The next chapter provides an analysis of the results within this context.

CHAPTER VI

SPATIAL ANALYSIS OF THE RESETTLEMENT PROGRAMS: POSITIVE AND NORMATIVE STAGES

This chapter utilizes Hermansen's scheme to link together the preceding chapters dealing with the nature of the region, an applicable growth centre strategy, and the objectives and spatial patterns of the Resettlement Programs.

The descriptive stage of the analysis has been completed. Development has been described as a process of planned population redistribution to reduce the problem of marginality and increase accessibility to goods and services. The designation of fishery growth centres and DREE Special Areas represented two complementary strategies designed to direct this development process. The migration pattern evident under the Newfoundland Resettlement Programs during 1965-1972 consisted generally of short distance moves into relatively small reception centres. A trend towards longer distance movement was evident while throughout the total period significantly high numbers of households resettled within the 45 minute potential commuting range of the larger selected centres.

A. The Positive Stage

The positive stage attempts to interpret the type of resettlement patterns which have occurred. While most studies of rural-urban migration are concerned with establishing the various causal factors operating, this examination has adopted an opposite approach. Since the theme of the research is the response by the populace to a government mobility policy, the factors reflecting the objectives, control and emphasis of the various individual Resettlement Programs are established a priori. The spatial patterns are thus evaluated in the context of these factors. However, in answering the question of why these patterns have developed, this stage of analysis does provide some understanding of the resettled households' location preferences, since there was the element of migrant choice respecting the reception centres. One of the major criticisms in fact of the earlier Programs was that households were given too much choice or perhaps not enough information to make a better choice in the selection of appropriate reception centres (Iverson and Matthews, 1968, 140). The various findings of Chapter V are treated separately, in terms of particular Resettlement Programs' objectives and degree of control.

1. Sending Centres

Concerning the issue of which settlements could obtain resettlement assistance to move, there appeared to be little control or established criteria during the total study period. Except for cases, such as compassionate moves, that is assistance granted to widows, handicapped or incapacitated people, only households in designated outports were to be granted assistance to move. A 'designated outport' was a community submitting a petition for resettlement assistance. This petition requirement ranged from 100% of the community in 1965 to 80% during 1966-1972 (Chapter II). Approximately 63.0% of the sending centres during the total period were non-designated communities. There were no other stipulations regarding status as an eligible sending centre prior to the Second Resettlement Agreement of 1970. Even under this Agreement it was not intended to exercise any significant degree of control as Sametz, the former Provincial Deputy Minister indicated:

> Households are not assisted to move under the Resettlement Program from communities which are growing or which are strong. This strength is self-determined, i.e., it is defined by the people of the community. They define whether they think it is an advantageous location, where they wish to stay, or a disadvantageous location from which people want to move (Sametz, 1971, 11).

The Programs were designed to include "only the eligible households which move from isolated or disadvantageous locations to other more advantageous places within the Province" (Rowe, 1969, 18). However, of all households resettled, 20.9% originated in centres within the 45 minute commuting distance of urban centres. If eligibility for assisted movement was based on the isolation factor this high proportion would suggest a lack of strict controls. The 45 minute commuting band as a measure of isolation is admittedly both arbitrary and partial.

2. Pace of Resettlement

The next area of concern regards the reduction in pace of resettlement during the last two years to the extent of a 50% consecutive decrease in the number of households resettled. This slowdown in approved moves, not requests to move, is significant considering the estimate that 11,000 households or 80,000 people representing 13.0% of the estimated 1981 population of 592,000 would be resettling within the next decade (Rowe, 1969, 23). Several reasons have been given for this reduction:

> First, the general job situation has had the effect of slowing down mobility at any rate. Secondly, the potential receiving communities have been getting organized to become actual reception communities during this initial adjustment period to the Second Agreement, and applicants have had to be turned back or held up until this has taken place (Sametz, 1971, 67).

The Robb and Robb study of 1967 suggested that the saturation point regarding resettlement capacity had been reached in many centres:

> with respect to the long-term attraction of a reception centre ... the communities which have in the past resulted in substantial increase in earnings for heads of families, notably Marystown, Burin, Port Saunders, Lewisporte and Wesleyville are not necessarily obvious choices for future resettlement. Persons who have already resettled there may have taken up the available opportunities (Robb and Robb, 1969, 195).

The reduction in pace and saturation arguments are based, of course, on the strictly economic, employment objective of the Resettlement Programs. The need to distinguish between the objectives of increasing accessibility to goods and services and increasing accessibility to employment opportunities was indicated in Chapter II. In most cases resettlement into a centre would often fulfill both objectives. However, the designation of the fishery growth centres, for example, was based primarily on existing or potential employment opportunities.

3. Fishery Growth Centres

The centres listed by Robb and Robb are amongst the fishery growth centres designated in 1966. The low overall resettlement into these centres (24.4%) was illustrated in Chapter V and poses a further question. Various reasons have been suggested for this low proportion despite incentive grant differentials supposedly favoring them.

These include: reluctance by fishermen to undertake offshore fishing employment, since many fishermen lacked both the necessary training and positive attitude towards 'wage and factory' work; low incentive in terms of real costs of living, e.g., low supply-high cost combination of housing, and indications that either offshore fishing is unacceptable or else outporters are sufficiently content with the 'outport way of life' (Canning, 1971, 12). Copes adds, "the problem really was that the offshore fishing bases and other supposed growth centres were capable of absorbing only much smaller numbers than the total being resettled" (Copes, 1971, 2). This comment by Copes suggesting initial limited capacity complements the saturation point argument raised by Robb and Robb.

4. Degree of Centre and Area Concentration

Paralleling the criticism that the few selected fishery growth centres and other urban growth points were not able to absorb the resettled households, was the opposition by critics to the proliferation of reception centres generally of small size. This pattern of resettlement has been criticized by several in terms of a growth centre strategy:

> Its defects relate to an inability to direct movement to the limited number of potential growth areas, and to fully reinforce through investment in infrastructure, those areas with a potential for success (Atlantic Development Board, 1969, 20).

> In the strict sense, the relocation of persons into a large number of reception towns was not a growth centre policy.... It seems clear that the number of centres selected should be reduced if a more concentrated population is desired (Canning, 1971, 13).

The relatively low proportion of resettlement into the few larger urban centres (29.5% into centres greater than 2000) and into the DREE Special Areas even following their designation (43.4% in 1970-71; 54.7% in 1971-72) reflects the fact that the Provincial Government at no time has encouraged movement solely into a few selected growth areas or places. While they have promoted movement to Special Areas during the last two years, movement to communities outside these Areas has also been assisted. As the former Provincial Minister responsible for administration of the Program explained, "This Program will not be restricted to the Special Areas but will include as well many scores of other communities which can serve as consolidation points for those people, who themselves, desire to remove their families from remoteness and isolation" (Rowe, 1970, 10). Also as discussed in Chapter III, the government has adhered to the principle of as many Special Areas as possible. As will be emphasized in the control stage an effective growth centre strategy can only be operationalized if there is a strengthening rather than watering down of the concentration process.

5. Short Distance Movement

The government's objective of increasing accessibility to goods and services, as distinct from increasing accessibility to employment opportunities whether in fishery or urban growth centres, is one possible explanation for the generally short distance moves observed in Chapter V. Olsson notes, for example, that economic movements in terms of income and employment opportunities tend to be of greater distance than the social service type (Olsson, 1965, 26).

The importance of available services and goods and their impact on resettlement trends should not be underestimated in this type of region, still dependent to a great extent on rural and natural resource development potential and experiencing continuous high unemployment.

> Access to jobs or access to income in some of our remote rural areas is increasingly of less importance than access to services. And this is especially true in these economies that have helped increase the incomes of disadvantaged areas by welfare programs.... (Raup, 1969, 61)[1]

There is evidence in fact that many resettlers continued their former employment. Fishermen, for example, continued to fish their traditional grounds (Copes, 1972, 109).

---

[1] Total federal government contribution of $257,755 represented 57.3% of the provincial government's gross revenue on current and capital accounts for 1972-73 (Historical Statistics of Newfoundland and Labrador, Supplement, 1972, Table G-1).

Another factor encouraging social service type movement is the significant phenomenon in Newfoundland of away-from-home-workers. Herrick found, in a sample of 406 households in 80 communities in 1968, that 35.0% of the employed male heads of households were living away from home for a month or more from home communities less than 300 and 30.4% for communities 300-999 in population (Herrick, 1971, 18). It is hypothesized that these workers moved their households from the marginal areas not because of employment opportunities, but in order to increase their families' accessibility to schools, medical facilities and goods and services in general. Further research is required to substantiate this, however.

6. Trends

A fluctuating trend was noted in several instances during the seven year period. The numbers of households resettled increased substantially in 1967-68 and decreased during the last two years. Several reasons were discussed earlier in this Chapter for the decline. Also in 1967-68 the percentage of resettlement into urban centres, fishery growth centres, identified growth centres, and DREE Special Areas increased significantly. All these categories except the DREE Special Areas experienced a decrease in proportions received in 1969-70 and then rebounded again in 1970-71. This seemingly haphazard sequence can be

accounted for, however, in terms of the response to changes in Resettlement Programs' objectives and emphasis.

For the purpose of explaining these changes in terms of government policy it is worthwhile to summarize the control and emphasis of the various Programs since 1965 (Chapter II).

During 1965-66, there were virtually no controls respecting the choice of reception centres. In effect, this was the last year of the "Centralization Program" in existence since 1954. What stipulations there were applied to the sending centres, namely the requirement of a 100% or 90% community petition for resettlement assistance.

The lowering of the community petition to 80% in addition to assistance to individual households from the sending centres wishing to move to fishery growth centres characterized the government policy in 1966-67. In addition to the basic grant of $1,000 and $200 for each family member in 1967 assistance was granted for purchase of serviced land in the major fishery growth centres ($1,000).

It was recognized by 1967 that the fishery growth centres would not be able to receive the "surplus inshore labour", so that movement to other growth centres was encouraged. Supplementary mortgage assistance was made available to purchase land in these centres as well.

In 1970, the DREE Special Areas policy went into effect. Emphasis was placed on resettlement into the Special Areas and other receiving communities such as land assembly areas outside the Special Areas. The assistance scheme, however, was designed so that households were encouraged to move to approved land assembly areas in Special Areas first, followed by movement into Special Areas, land assembly areas not in Special Areas, and finally into other reception centres, in that order (Canning, 1971, 18).

In interpreting the response to those changes in policy and control, it should be borne in mind that in some cases a time-lag effect was in operation. Several months would elapse from the time of policy implementation to the actual movement of households, so that moves recorded in 1967-68, for example, were in response in some instances to the policy decision of 1966. The increasing proportion of movement into and within the potential commuting distance of these centres categorized coincides in great measure with changes and emphasis of policy during the seven year period. However, the decrease in these respective proportions in 1969-70, the year just prior to the DREE emphasis remains unexplained. One possible explanation was an increasing housing shortage and cost factor which was partially relieved by additional incentives to move into DREE Special Areas. This is speculation, however, and requires additional research to verify. The

prohibitive effect of land and housing costs in the larger centres is probably the single most important factor discussed in the various economic and sociological studies on resettlement (Iverson and Matthews, 1968, 114; Copes, 1971, 131). Discussion with government officials concerning resettlement during this period failed to shed any additional light on the question.

In conclusion, the positive stage of analysis has indicated a definite positive response to the social-service orientation of the Resettlement policy. There has been a general increase of resettlement into the designated growth centres or within their potential commuting hinterland reflecting some measure of concentration. However, the generally short distance movement into relatively small centres is accounted for largely by the lack of strict directional control. The emphasis on relocation for employment reasons only was often secondary to increasing accessibility to goods and services in nearby centres. Governmental control was best exemplified in the reduction in approved household moves during the last few years mainly because of the inadequacy of potential reception centres.

B. The Normative Stage

The question raised is whether or not these resettlement patterns are desirable for the long-term development of the province in general. It is proposed to

approach this question in the normative stage of analysis. This approach, as Hermansen admits, involves general, theoretical and abstract considerations, and value judgements. It will be argued that in fact the spatial patterns of resettlement are consonant with the growth centre strategy proposed in this thesis. This point of view is intended in part to refute some of the criticisms raised against the growth centre concept in general, and the suggestions that resettlement into the larger number of centres was not part of a growth centre strategy in particular.

The first point to be recognized is that population concentration involving resettlement into fewer and larger communities, is an evolutionary process. Findings elsewhere (Gibbs, 1963; Hansen, 1972; Hermansen, 1968) suggest that this process left undisturbed operates in stages. Hermansen notes for instance:

> Both empirical observations and theoretical considerations show that in the first phase of the process, the small local centres receive strong growth impulse due to a local concentration of service activities and expansion of these in the low level nodal regions and give rise to a rapid growth in population due to local immigration. Centres at the higher levels in this phase often have lower growth rates than the lower order centres. The rapid growth in the low-level centres comes to an end after a certain time and is displaced by rapid growth in the centres immediately above, due to the centralization of functions and activities from the local centres to the regional centres. This shift takes place at about the same time that the local migration sources in the rural areas are being exhausted and leads to increased migration from the low-level centres to the high-level centres. The growth of the local centres thus changes to decline (Hermansen, 1968, 190).

Evidence of the slowing down of the growth performance of the smaller centres in the province was shown in Table 4.2. The cited works do not stipulate, however, the length of time involved in this process. This is typical of much research as Kemper notes:

> Stage migration requires time, but usually the temporal element is submerged in the discussion of the geographical aspects, particularly since we have little knowledge of the time required for migration in stages (Kemper, 1970, 43).

Needless to say, it depends very much on the particular study area and extraneous controls, such as government policy on settlement and population distribution. A program such as the resettlement scheme designed to speed up this process and eliminate stages is almost certain to experience the problem of what Nystuen terms "historical tension":

> Existing facilities and institutions will always be not quite suitable for the present because society is always creating new activities which, for greatest efficiency, require new arrangements (Nystuen, 1963, 382).

Rapid change in settlement pattern involving removal of the lowest level isolated communities and encouragement for migrants to resettle into the larger centralized urban centres in one stage is often too abrupt. The pattern most likely to develop in the first stage would consist of short distance moves to nearby similar size centres in a familiar environment. This is not to suggest that some longer distance moves into larger urban centres will not take place

or should not, in fact, be encouraged in some cases, but rather to suggest that few moves will be of this type. The household resettlement which has occurred has primarily been of a short distance nature.

It was indicated in Chapter V that there has been some evidence, however, of longer distance moves into larger centres. Earlier independent research by the author (1972) and Brenton (1972) analyzed movement into and out of the 'intermediate centres', i.e. reception centres which became sending centres, to determine any evidence of stage migration. Based on a sample of 25 centres, Brenton found "Movements in the first stage tended to be much shorter, perhaps only a few miles to a nearby fishing community, whereas in the second stage the movement distances were much greater, and these movements were, in many cases, to the larger (in terms of population) and more industrialized centres of Newfoundland" (Brenton, 1972, 7). There has been no research, however, to determine whether the same householders were involved in the subsequent movement but since householders were generally assisted to move only once it could be assumed they were not the same.

The advisability of encouraging a stage migration process in resettlement planning has been suggested by Copes. In a five stage model, he advocates resettlement from small and isolated outports into large and central outports; fishery growth centres; local trade centres and small

industry centres; large industrial centres in Newfoundland; and finally mainland centres (Copes, 1972, 116). The Copes model, however, runs counter to the arguments of this research in two respects. First there is the notion of encouraging 'surplus' population out of the region into mainland centres, and secondly the idea of abandoning large proportions of the large and central outports. The benefits of the "decentralized concentration" principle as discussed in Chapter I were the reduction of pressure of national concentration while simultaneously overcoming the problem of extreme population dispersion in the region. Copes appears to make the assumption that the national and even provincial metropolitan areas are, or should be, the ultimate aim of migrants. Kemper suggests quite rightly that "this assumption remains unvalidated and needs to be subjected to close scrutiny in future research" (Kemper, 1970, 40).

Copes' suggestion for a high degree of population concentration is somewhat similar to the prediction of the 1969 Provincial Government Budget Speech that eventually the settlement pattern would consist of approximately 236 urban centres, 36 of which would contain a total of about 500,000 people (Government of Newfoundland and Labrador, 1969, 27). However, the author feels that this level of concentration is not necessary or desirable. Resettlement does not have to occur into these larger centres. Various

planners, politicians, and academics have long argued that the future development of the province should remain to a significant degree in rural activities involving more efficient exploitation of natural resources and secondary processing of these resources (Chapter I). The urban centres have two main functions to complement such rural development. The first is to function as accessible service centres for the rural hinterland. Secondly, the larger growing service centres should provide essential employment opportunities for the surplus rural population. This argument is based on the premise stated earlier, that these natural growth centres are the obvious focii for future development efforts since there is a great probability of investment occurring in larger centralized centres possessing the necessary infrastructure and population base. It should be recognized that at a regional scale these constitute the intermediate sized centres for which the 'decentralized concentration' principle is designed.

It is possible, assuming people wish to relocate from isolated areas, to achieve accessibility to the natural growth centres while remaining engaged in rural activities. Eventually, the choice of commuting or moving to these centres for employment is made available. The pace of resettlement from isolated areas does not have to slow down because of lack of present employment opportunities in the

urban centres, nor do people have to relocate into these centres now or in the future. Dual accessibility to rural areas of natural resource employment and to the natural growth centres is possible. This idea is not startling, but what is significant is that such an approach permits simultaneous urban and rural development with a minimum amount of resettlement. An urban growth centre strategy is not in conflict but rather facilitates and complements rural development potential. Dual accessibility is possible if the idea of growth centre is expanded to growth area. This approach is not new. In the theoretical growth centre literature, for example, Allen and Hermansen consider the geographic size of a growth centre to include the "acceptable travel to work area surrounding the centre" (Allen and Hermansen, 1968, 66). The DREE Special Areas scheme is a policy application of the concept incorporating the urban centre and the surrounding hinterland. It is interesting to note that under the Fisheries Resettlement Program, resettlement into communities within 15 miles of fishery growth centres was considered acceptable for assistance. However, what is new is that considering growth centres as growth areas provides the justification for both this type of resettlement and a type of strategy which considers growth centres as the present growing large service centres.

Summary

The interrelationship between theoretical growth centre considerations in general and resettlement for the province in particular can be summarized as follows. Resettlement in the form of centralization is a type of structural change considered by the federal and provincial governments as necessary for the province to reduce isolation. This process of population concentration involving fewer and larger settlements is also considered by some academics to be an important component of growth centre strategy for a sparsely populated rural problem region. These larger settlements constitute in some cases the natural growth centres of the regions based on structural characteristics of large size, service function and past growth performance. The Resettlement programs have had generally two distinct - sometimes mutually exclusive objectives - increased accessibility to goods and services and increased accessibility to present and future employment opportunities available in the larger settlements. Therefore, these centres provide not only the source of present goods, services and urban type employment for resettled households, but also act as the focus for future development efforts since there is a greater probability of investment occurring in larger centralized centres possessing the necessary infrastructure and population base. The final

variable affecting the process of geographical concentration in this type of region is the potential of the rural areas removed from the existing natural growth centres. In summary, a growth centre strategy, which provides a rationale for the resettlement process and also enables simultaneous urban and rural development, is both desirable and possible.

The type of growth centre strategy and resettlement programming which encourages movement into growth areas, not necessarily large centres, is considered the normative situation for several reasons. First, dual accessibility to rural areas and urban centre is achieved. This permits simultaneous urban and rural development, so that an urban growth centre strategy is not it conflict with rural growth. On the one hand, the probability of manufacturing and other urban type investments become greater where there is a potential employment and market base in or within commuting distance of the centre. Alternatively, these natural growth centres can function as accessible service centres for the rural population. Secondly, the response by the resettled households implies certain locational preferences consistent with this strategy. The desire that concentration should replace dispersion has been demonstrated during the study period in that resettlement from marginal locations has occurred. However, it has also been demonstrated that centralization does not have to mean urban agglomeration.

The large provincial urban centre is not necessarily the ultimate objective of the rural household. Increased accessibility to higher levels of goods and services is possible with minimum movement.

The elements comprising a resettlement policy within this overall development framework are prescribed in the final chapter in the context of Hermansen's control approach.

CHAPTER VII

SPATIAL ANALYSIS OF RESETTLEMENT PROGRAMS: CONTROL STAGE AND SUMMARY

The problem of planning and formulating policy to achieve the suggested normative resettlement pattern is, adopting Hermansen's terminology, the function of the control process. This task requires first and foremost, an understanding of the position of resettlement in a total development policy for the region. Such an understanding is necessary to ensure that resettlement contributes towards overall development goals and that conflict with other regional policies is minimized.

Hermansen considers control to consist of the continuous process of problem recognition, planning, implementation, review, and revision. This stage, in effect, encompasses elements of the descriptive, positive, and normative stages, and provides the operational framework for regional policy formulation (Hermansen, 1972, 15).

The position and necessary interrelationships of resettlement with other regional policies can be best understood therefore by formulating a settlement location policy utilizing the control process. Table 7.1 summarizes the procedure. The list of criteria and results are by no means exhaustive, but include primarily the findings and

TABLE 7.1

FORMULATION OF SETTLEMENT LOCATION POLICY

Control Procedure	Criteria	Results
I. Problem Identification	Regional analysis of economic, demographic and social variables	-Lack of manufacturing, and efficient natural resource utilization -Low, but increasing levels in provision and utilization of public and private services -Marginality problems
II. Planning	Strategy development including identification of objectives, guidelines and desired qualities of settlement pattern	-Need for a growth centre strategy involving the principle of decentralized concentration and providing dual accessibility
	Regional interrelationships and constraints	-Coordination with other regional development policies -Settlement distribution problems -Lack of definite growth centre strategy and related research needs
	Means and instruments	-Growth centre strategy including identification of types of centres -Resettlement of rural isolated communities

TABLE 7.1 (Continued)

FORMULATION OF SETTLEMENT LOCATION POLICY

Control Procedure	Criteria	Results
III. Implementation	Administrative procedures and incentives	-DREE projects -Rural Development Authority incentive grants -Resettlement assistance
IV. Review	Policy evaluation for changing conditions	- --
V. Revision	-	- --

Sources: Control procedure and criteria based on Hermansen (1972) and Allen and Hermansen (1968).

observations of this research. This approach affords the opportunity to focus on the resettlement aspect and to demonstrate the thesis's contribution towards policy formulation.

This exercise reveals several important characteristics and needs of resettlement planning to achieve its goals of increasing accessibility to centres providing goods, services, and future employment opportunities. Resettlement as a type of structural change is a means and not an end in itself. Many criticisms aimed at past Resettlement Programs have been misdirected in the sense that they were concentrated on the inadequacy of employment opportunities and infrastructure provisions in the reception centres. Resettlement is simply a policy of population relocation, one aspect of a larger settlement location policy. It should be possible to assume that conditions in the source area necessitate out-migration while policies involving infrastructure provision, and in some cases employment opportunities, are operating in the destination areas. Therefore, such a policy must be coordinated with other components of the larger settlement policy and also other regional policies such as transportation and economic development.

Ideally, resettlement should only proceed after development possibilities have been exhausted in the source

area. Once resettlement is deemed necessary, only minimum numbers and distance need to be involved. A complementary growth centre and area policy can provide direction to this movement. An urban policy for the region should also consider the required minimum size, number and distribution of such growth centres. This thesis has identified the natural growth centres utilizing several growth and centrality indices. The idea of growing service centres functioning as growth centres has been developed. The review and revision stages of the control process might indicate, however, a need for planned growth centres in areas of the province without natural centres including, for example, census divisions 3 and 9. It has been demonstrated that households are willing to move short distances, so that a better distribution of natural growth centres, combined with the growth area concept, would permit this short distance movement to continue on a rational basis. This is recommended to attain the desirable condition of dual accessibility to rural employment source areas and to the urban centres providing services and employment. Short distances may further mean that resettled heads of households can continue in familiar occupations such as using the same fishing grounds, facilities, and same sawmill operations, while enabling families to take advantage of health, education and various other services. The main disadvantage would involve

increased travel distance forced on household heads and even temporary migration. This should, however, be a short term disadvantage until employment opportunities become available in the growth area.

Coordination with other regional policies facilitates attainment of established developmental goals. If, for example, cost minimization of providing public facilities is an accepted objective, then coordination of transport and resettlement policies should help prevent recurring situations of road construction into communities which later were evacuated (Rowe, 1969, 13). Rowe comments that such wastage "surely illustrates the fact that the Government did not engage in the business of trying to predict these moves at the expense of the people involved" (Rowe, 1969, 13). However, predicting and controlling the future settlement distribution of a region does not have to be in conflict with a society's locational preference.

A transportation policy which accounts for future settlement pattern change is necessary. A concern for priorities in road construction and flexibility in transport planning could avoid the situation of new roads into future evacuated communities while simultaneously meeting the electorates' demands for more efficient transportation. While ideally, each community should be linked to a developed road network, budgetary cost restraints often require a priority scheme designed to service the growth areas first.

This approach is important also to the advancement of dual accessibility.

The necessity of improved transportation has been recognized by DREE in that expenditure on highways, streets, bridges, etc. represented the largest single item of expenditure under the First Special Areas Agreement. Large expenditure was also allocated to highway construction outside Special Areas improving communications between the various Special Areas. The problem of the indivisibility and longevity of excessive road capital investment is reduced by such concentration efforts. However, and more relevant to this thesis, by making such growth areas more attractive through such infrastructure investment, the likelihood of resettlement into them is increased.

Resettlement and industrialization policies should be especially coordinated. Earlier, in Chapter I, the feasibility and desirability of simultaneous urban and rural development was mentioned. Potential in large scale industrial complexes of the growth pole type, along with small scale manufacturing and service growth centre development, were discussed in Chapter III. It was stressed that an essential prerequisite for development of both urban and rural sectors of the economy is population concentration. Economies of scale, linkage effects and adequate infrastructure provision are necessary for the efficient processing of natural resources as they are for

secondary manufacturing. Growth area strategy employing the decentralized concentration principle provides the means to achieve the necessary degree of population concentration for both urban and rural development. A growth area should contain larger urban and rural centres. Improved communications between these types of centres would be possible by concentrating transport investment in growth areas as suggested previously in the transportation policy. Resettlement into a growth area would increase accessibility to both urban and rural employment opportunities, in addition, to higher levels of goods and services. The objectives of short distance moves, removal of the isolation problem, and increased accessibility could be achieved. The problem of determining trade-off between migration and commuting distances raised by Hansen (Chapter I), is resolved, therefore, by encouraging short distance moves from isolated areas into designated growth areas. A resettlement policy of this nature would be beneficial to the individual resettled household and to the province, in general, because of the increase in accessible labour force and market population.

The implementation stage of the control process involves basic administrative procedures and incentives to achieve the stated objectives. Ample financial assistance in the form of housing and moving costs is necessary to encourage movement into growth areas. This is particularly

important given the overall prohibitive costs of land and housing, a problem discussed in Chapter VI. An information program explaining the opportunities in growth areas should be maintained along with encouraging, if necessary, the most isolated households to move.

The review and revision stages involve evaluating the policy periodically in light of changing economic and social conditions. Changes in the nature of the resettlement process itself require research. This thesis has revealed that the pattern of resettlement during 1965-1972 consisted generally of short distance moves from relatively isolated settlements to many larger and rural centres. Even though there were significant trends during the seven year period in response to policy changes involving longer distance and larger reception centres, a rural to rural dispersed resettlement process was evident. It was suggested that there was some evidence of a stage type of migration operating. The occurrence in the later years of larger sending and receiving centres and movement out of the 'intermediate centres' involving longer distances were indications of this phenomenon.

Although little emphasis has been placed in this thesis on the diffusion of the resettlement idea, it is apparent that acceptance of the process has diffused from the east coast, in particular census divisions 1, 2, and 7, to western-northern parts of the province. The mechanics of

this diffusion process, such as the effect of improved governmental information flow, require examination. Finally, the relationship of the Resettlement Program to other mobility programs needs to be explored, such as the Federal Government's manpower mobility program. The suggestion made in this study that social service type movement should continue during periods of provincial unemployment when migration for employment reasons is reduced requires consideration for a resettlement policy.

This examination of the control stage concludes the contribution of this research towards resettlement policy, in particular, and the development of the growth centre concept, in general.

Finally, and by way of a summary, it is necessary to indicate these contributions in the context of Hermansen's theoretical framework. The thesis, although partial in scope, has provided a case study of the process of concentration, considered an essential feature of the growth centre concept. Settlement pattern reorganization involving fewer and larger communities is a structural change type of development in the province of Newfoundland. Hermansen's suggested four approaches to the study of growth centres have been interpreted as stages in analyzing the relationship between the Resettlement Programs and a complementary growth centre strategy. The nature of this development process and the factors necessitating development were the concern of

the descriptive stage. Chapter I described the structural characteristics and changes in the province which categorized it as a rural, sparsely populated problem region. The incidence of marginality, low but increasing income levels, and increasing demand for goods and services indicate a need for population concentration. Several techniques and data sources were presented during the regional analysis. For example, a potential commuting range of 45 minutes, similar to Hansen's for Norway, was adopted to measure marginality.

Chapter II reviewed the history, justification, and objectives of the Newfoundland Resettlement Programs since 1954. Two distinct and sometimes mutually exclusive objectives were ascertained: to increase accessibility to goods and services and to increase accessibility to employment opportunities. The emphases of various phases or Programs were revealed from the Centralization Program of 1954 to the DREE involvement since 1970.

Chapters III and IV were devoted entirely to the growth centre strategy component of Hermansen's framework. Chapter III reviewed the development of the concept in general and its applicability to the study region in particular. While growth centres representing spatial manifestations of growth poles were felt to have a role to play in the development of the province, such as an oil refinery industrial complex, the social-service aspects of

a growth centre strategy were emphasized. The notion of growing service centres functioning as natural growth centres was suggested as these would be the most likely points of future investment opportunities. It was argued that these types of growth centres would be smaller in size and greater in number than normally acceptable in other types of regions with larger populations. It was stressed that the need to encourage intra-provincial migration to reduce problems of isolation and population congestion in the large national centres required adherence to the decentralized concentration principle or local regional concentration.

The DREE Special Areas strategy in the context of the growth centre concept was reviewed next. While the proliferation of Special Areas and the social adjustment orientation in their selection represented a diluted application of the concept, it was felt that the decentralized concentration principle was being followed. Infrastructure investment and resettlement into the eight Special Areas has been stressed by the governments and not concentration at the centre scale only.

Chapter IV presented a methodology for the identification of the natural growth centres of the region. A list of twenty centres was derived based on six indicators reflecting past growth performance and centrality of service centres. These indicators were divided into three

categories; structure, flow and growth, and included settlement population size and growth, position in a service centre hierarchy, similar to that used by Borchert and Adams in the United States, and the Atlantic Development Board for the Atlantic provinces, a retail sales per capita index, location of different types of telephone switching centres, and finally business telephone increase.

Chapter V analyzed the spatial patterns of the Resettlement Programs for the period 1965-1972. Four types of spatio-temporal examinations were conducted with the available data. The first examination indicated that there was little if any significant correlation between originating-terminating movement and five independent variables at the census division scale. The five variables assumed to reflect areal variations in economic-social-spatial structure included; the occurrence of urban population, growing service centres, marginality, average family income, and high school capacity. The second examination constituted a shift in focus. Resettlement into the identified natural growth centres, urban centres, and fishery growth centres was examined. The results showed generally low proportions of the resettled households with increasing proportions in a fluctuating trend. High proportions in 1967-68 and 1970-71, in particular, and low proportions in 1969-70 were highlighted. The Olsson technique and the Transaction Flow Model were used in the third examination to measure

resettlement distances. Both techniques revealed generally short distance moves for the total period, with a trend of fluctuating increase in distance similar to the yearly pattern revealed in the second examination. The final examination was designed to determine if there was a concentration of resettled households on an area basis. Movement into the DREE Special Areas, and within 45 minutes commuting distance of the urban and identified growth centres was recorded. The proportions were notably higher than revealed in the second examination, indicating some degree of spatial success. Again the fluctuating trend was revealed as in the previous examination.

Chapter VI examined the positive and normative stages of the Hermansen scheme. The positive stage was concerned with answering the question of why these patterns and trends existed, while the normative stage constituted an opinion regarding the optimum type of resettlement pattern for the region. During the positive stage of analysis the results were interpreted mainly in terms of the response to resettlement policy changes and emphasis since 1965. For example, the Fisheries Resettlement Program of 1967-1970, and coordination of the DREE Special Areas policy and resettlement programming in 1970-72 accounted for increased proportions of resettlement into selected centres and areas. It was argued that the social service emphasis of the Resettlement Programs accounted mainly for

the generally short distances as these types of moves tend to be of shorter distance than the employment seeking migration. The problem of land and housing costs in the larger centres was cited as an important factor for the low proportions of movement to these centres. Finally, it was suggested that the type of resettlement occurring might reflect, in fact, the locational preference of the population involved.

The suggested normative resettlement pattern would require only short distance moves into growth areas, not necessarily the large centres. This argument was based on the notion of dual accessibility in the region. If resettled households could be made accessible to the large growing service centres, while simultaneously being accessible, in many cases, to areas with rural employment opportunities, the need for extreme concentration into a few selected centres could be avoided. This strategy would permit needed resettlement to continue from the isolated areas without causing unnecessary pressure on the larger centres. Rural natural resource development could be pursued. The growth centre strategy proposed earlier in this context, would complement rather than conflict with rural development efforts. Employment opportunities would increase gradually in the large centres, partly because of the increased market and labour supply within commuting distance. This approach has the additional advantage of

accounting for the stage migration process which appeared to exist. The first stage short distance movement, in fact, would accomplish the degree of accessibility and concentration required for dual accessibility.

The question of how to accomplish this normative situation constituted the control stage. It was suggested that the first step in this planning stage was the adoption of an explicit resettlement policy. This policy should ideally be coordinated with other regional development policies, and finally integrated into a total regional long-term plan. Examples included coordination with a transport policy emphasizing a developed road network in and between the growth areas, and an urban development policy involving the identification and optimum distribution of growth centres. Several research needs for the development of these policies were suggested and the contribution of this thesis reviewed.

Adoption of the growth centre concept is a potentially effective and realistic approach to the problem of regional economic and social development. Hopefully, this thesis has indicated its role in formulating a resettlement policy designed to solve some of Newfoundland's problems.

BIBLIOGRAPHY

1. Government Publications:

A. Canada

Atlantic Development Board. 1969. Urban Centres in the Atlantic Provinces. Background Study No. 7. Ottawa.

Atlantic Development Council. 1971. A Strategy for the Economic Development of the Atlantic Region, 1971-1981. Fredericton.

Department of Communications. 1971. Telecommission Study 2 (d). Communications and Regional Development. Ottawa: Information Canada.

Department of Regional Economic Expansion.1970. Canada and Newfoundland: Second Resettlement Agreement, Ottawa.

Department of Regional Economic Expansion. 1971. Canada/ Newfoundland Second Special Areas Agreement, Ottawa.

Department of Regional Economic Expansion. 1971. Population Characteristics - Unincorporated Communities - Newfoundland and Labrador. Ottawa.

Government of Canada. 1967. Draft of an Agreement between the Governments for a Five Year Program known as the Newfoundland Fisheries' Resettlement Program.

Government of Canada, House of Commons. 1970. Minutes of Proceedings and Evidence of the Standing Committee on Regional Development. Issue No. 3, December 15.

Government of Canada. 1971. Office Consolidation of the Regional Development Incentives Act and the Regional Development Incentives Regulations, Ottawa: Information Canada.

Jamieson, Hon. D. 1973. "Notes for an Address at a Meeting of the Rotary Club in Conjunction with the Business Week Activities of Memorial University." St. John's.

Statistics Canada. Road and Street Mileage Expenditure. 53-201.

Statistics Canada. Seasonally Adjusted Labor Force Statistics. 71-201.

Statistics Canada. Telephone Statistics. 56-203.

B. Newfoundland

Department of Community and Social Development. 1967a. Memorandum on Reception Centres: Categories, Criteria and an Initial Designation, St. John's.

Department of Community and Social Development. 1967b. Minutes of Meeting of Fisheries' Household Resettlement Committee. St. John's. August 8.

Department of Community and Social Development. 1968. Basic Outline of the Fisheries' Household Resettlement Program in Newfoundland, 1967-1970.

Department of Community and Social Development. 1970. Statistics Federal-Provincial Resettlement Program, First Five Year Period April 1, 1965-March 31, 1970. St. John's.

Department of Community and Social Development. 1971a. Statistics Federal-Provincial Resettlement Program, First Year (1970-71) of the Second Resettlement Agreement. St. John's.

Department of Community and Social Development. 1971b. Resettlement Information. St. John's.

Department of Community and Social Development. 1972. Statistics Federal-Provincial Resettlement Program, Second Year (1971-72) of the Second Resettlement Agreement. St. John's.

Government of Newfoundland and Labrador. 1967. Report of the Royal Commission on the Economic State and Prospects of Newfoundland and Labrador. G.F. Pushie, Chairman, St. John's: Queen's Printer.

Government of Newfoundland and Labrador. 1969a. Budget Speech.

Government of Newfoundland and Labrador. 1969b. Estimates of the Department of Community and Social Development.

Government of Newfoundland and Labrador. 1970. Historical Statistics of Newfoundland and Labrador. St. John's: Queen's Printer.

Rowe, Hon. W.N. 1969. "The Newfoundland Resettlement Program. A Case Study of Regional Development and Social Adjustment". Paper presented at the Harrison Hot Springs Thinkers Conference. Harrison Hot Springs.

--------. 1970. "A Generalized Description of Programs under the Department of Regional Economic Expansion". Address to the Marystown-Burin Board of Trade. Marystown.

Sametz, Z.W. August 19, 1971. "The Second Newfoundland Resettlement Agreement". Address to Rotary Club. St. John's.

C. Other.

Atlantic Provinces Economic Council. 1971. Fifth Annual Review, The Atlantic Economy. Halifax.

Atlantic Provinces Economic Council. 1972. Sixth Annual Review, The Atlantic Economy - The Growth Centre Concept. Halifax.

Boni, Watkins, Jason and Company. 1969. Economic Outlook for Province of Newfoundland. New York.

Carol, H. 1966. "Geographical Identification of Regional Growth Centres and Development Regions in Southern Ontario". A report to the Regional Development Branch, Department of Economics and Development, Province of Ontario.

Copes, P. 1972. The Resettlement of Fishing Communities in Newfoundland. Ottawa: Canadian Council on Rural Development.

Economic Council of Canada. 1971. Design for Decision Making. An Application to Human Resource Policies. Ottawa: Information Canada.

Economic Council of Canada. 1972. "A view of the Years to 1980". Ottawa.

Francis, J.P. and Pillai, N.G. 1972. Regional Development and Regional Policy - Some Issues and Recent Canadian Experience. Ottawa: Department of Regional Economic Expansion.

Grose, R.E. 1971. Manufacturing Opportunities in the Province of Newfoundland and Labrador. Fredericton: Atlantic Development Council.

Hodge, G. 1966. "The Identification of Growth Poles in Eastern Ontario". A Report to the Ontario Department of Economics and Development.

--------. 1969. "Urbanization and Regional Development: A Research Agenda". Prepared for the Canadian Council on Urban and Regional Research, Ottawa.

Regional Development Branch. 1970. Design for Development: Niagara (South Ontario) Region. Department of Treasury and Economics. Government of Ontario.

II. Academic

A. Books

Abler, R., Adams, J.S., and Gould, P. 1971. Spatial Organization. The Geographer's View of the World. Englewood Cliffs: Prentice-Hall.

Allen, K. and Hermansen, T. 1968. Regional Policy in EFTA: An Examination of the Growth Centre Idea. Geneva: European Free Trade Association.

Berry, B.J.L. 1967. Geography of Market Centers and Retail Distribution. Englewood Cliffs: Prentice-Hall.

Boudeville, J.R. 1966. Problems of Regional Economic Planning. Edinburgh: Edinburgh University Press.

Bylund, E. 1972. "Growth Centres and Administrative Area Problems within the Framework of the Swedish Location Policy". Growth Poles and Growth Centres in Regional Planning. Edited by A.R. Kuklinski. Paris: Mouton Press, pp. 231-242.

Darragh, J. 1970. Regional Policy in EFTA: Industrial Estates. Geneva: European Free Trade Association.

Davin, L.E. 1964. Economie Regionale et Croissance. Paris: Editions Genin.

Friedmann, J. 1966. Regional Development Theory: A Case Study of Venezuela. Cambridge, Mass: M.I.T. Press.

--------, and Alonso, W. 1964. Regional Development and Planning. Cambridge, Mass: M.I.T. Press.

Garfield, P.J., and Lovejoy, W.F. 1964. Public Utility Economics. Englewood Cliffs: Prentice-Hall.

Gregory, S. 1968. Statistical Methods and the Geographer. London: Longmans.

Hansen, N.M. 1970. Rural Poverty and the Urban Crisis. Bloomington: Indiana University Press.

--------, ed. 1972. Growth Centers in Regional Economic Development. New York: The Free Press.

Hermansen, T. 1968. "Service Trades and Growth Centres". Regional Policy in EFTA: An Examination of the Growth Centre Idea. Geneva: European Free Trade Association, pp. 143-210.

---------. 1972. "Development Poles and Development Centres in National and Regional Development: Elements of a Theoretical Framework". Growth Poles and Growth Centres in Regional Planning. Edited by A.R. Kuklinski. The Hague: Mouton Press, pp. 1-68.

Hirschman, A.O. 1958. The Strategy of Economic Development. New Haven: Yale University Press.

Hoover, E.M. 1969. "Some Old and New Issues in Regional Development". Backward Areas in Advanced Countries. Edited by E.A.G. Robinson. London: London Press, pp. 343-360.

King, L.J. 1969. Statistical Analysis in Geography. Englewood Cliffs: Prentice-Hall.

Meier, R.L. 1960. "Information, Resource Use, and Economic Growth". Natural Resources and Economic Growth. Edited by J.J. Spengler, Washington, D.C.: Resources for the Future, Inc., pp. 98-119.

Misra, R.P. 1972. "Growth Poles and Growth Centres in the Context of India's Urban and Regional Development Problems". Growth Poles and Growth Centres in Regional Planning. Edited by A.R. Kuklinski, The Hague: Mouton Press, pp. 141-168.

Perloff, H.S. 1963. How a Region Grows: Area Development in the U.S. Economy. Supplementary Paper No. 17. New York: Committee for Economic Development.

Pioro, Z. 1972. "Growth Poles and Growth Centres Theory as Applied to Settlement Development in Tanzania". Growth Poles and Growth Centres in Regional Planning. Edited by A.R. Kuklinski. The Hague: Mouton Press, pp. 169-194.

Perroux, F. 1955. "Note Sur La Notion de 'Pole de Croissance'". Economie Appliquée vii, pp. 307-320; translated in Economic Policy for Development. Edited by I. Livingstone. Middlesex: Penguin, 1971.

Phillips, B.S. 1966. Social Research/Strategy and Tactics. New York: The Macmillan Company.

Richardson, H.W. 1969. Elements of Regional Economics. Middlesex: Penguin.

Rossi, P.H. 1955. Why Families Move. Glencoe, Illinois: The Free Press.

Smith, D.M. 1971. Industrial Location: An Economic Geographical Analysis. New York: John Wiley & Sons.

Theakstone, W.H. and Harrison, C. 1970. The Analysis of Geographical Data. London: Heinemann Educational Books.

B. Articles

Abler, R. 1971a. "Distance, Intercommunications and Geography". Proceedings of Association of American Geographers. III, pp. 1-4.

Brams, S.J. 1966a. "Transaction Flows in the International System". The American Political Science Review. LX:4, pp. 880-898.

Campbell, J. 1972. "Growth Pole Theory, Digraph Analysis and Interindustry Relationship". Tijdschrift Voor Economische En Sociale Geographie. LXII:2, pp. 79-87.

Darwent, D.F. 1969. "Growth Poles and Growth Centres in Regional Planning - A Review". Environment and Planning. I:1, pp. 5-32.

Day, E.D. and Pearson, R.E. 1967. "Closure of the Bell Island Iron Ore Mines". Geography. LII, pp. 321-325.

Deutsch, K.W. and Isard, W. 1961. "A Note on a Generalized Concept of Effective Distance". Behavioral Science VI, October, pp. 308-311.

Friedmann, J.R. 1968. "The Strategy of Deliberate Urbanization". Journal of the American Institute of Planners, XXX IV: 6, pp. 364-373.

Gibbs, J.P. 1963. "The Evolution of Population Concentration". Economic Geography. XXXIX, pp. 119-129.

Green, H.L. 1953. "The Geographic Use of Point-to-Point Telephone Call Data". Paper presented to the annual meeting of the Association of American Geographers. Abstract published in Annals of Association of American Geographers, XLIII, p. 169.

--------. 1955. "Hinterland Boundaries of New York City and Boston in Southern New England". Economic Geography. XXXI, pp. 283-300.

Harper, R.A., Schmudde, T.H., and Thomas, F.H. 1966. "Recreation based Economic Development and the Growth Point Concept". Land Economics. XLII: 1, pp. 95-101.

Kemper, R.V. 1970. "Rural-Urban Migration in Latin America: A Framework for the Comparative Analysis of Geographical and Temporal Patterns". International Migration Review. IV, pp. 36-47.

Kuehn, J.A. and Bender, L.D. 1969. "An Empirical Identification of Growth Centers". Land Economics, XLV: 4, pp. 435-443.

Lijphart, A. 1964. "Tourist Traffic and Integration Potential". Journal of Common Market Studies. II: 3, pp. 251-262.

Lotz, J. 1971. "Resettlement and Social Change in Newfoundland". Canadian Review Sociology and Anthropology. VIII:1, pp. 48-59.

Morrill, R.L. and Pitts, F.R. 1967. "Marriage, Migration and the Mean Information Field". Annals of the Association of American Geographers. LVII, pp. 402-422.

Northam, R.W. 1969. "Population Size, Relative Location and Declining Urban Centers, Conterminous United States 1940-1960". Land Economics. XLV: 3, pp. 313-322.

Nystuen, J.D. 1963. "Identification of Some Fundamental Spatial Concepts". Papers of the Michigan Academy of Science, Arts and Letters. XLVIII, pp. 373-384.

Olsson, G. 1965. "Distance and Human Interaction". Geografiska Annaler. XLVII B, pp. 3-34.

Palm, R. 1973. "The Telephone and the Organization of Urban Space". Proceedings of Association of American Geographers. V, pp. 207-210.

Perroux, F. 1950. "Economic Space. Theory and Applications". Quarterly Journal of Economics, LXIV: 1, pp. 89-104.

Roseman, C.C. 1971. "Channelization of Migration Flows from the Rural South to the Industrial Midwest". Proceedings of the Association of American Geographers. III, pp. 140-146.

Savage, R. and Deutsch, K.W. 1960. "A Statistical Model of the Gross Analysis of Transaction Flows". Econometrica, 28, pp. 551-572.

Soja, E.W. 1968. "Communications and Territorial Integration in East Africa: An Introduction to Transaction Flow Analysis". East Lakes Geographer. IV, December pp. 39-57.

Stouffer, S.A. 1940. "Intervening Opportunities: A Theory Relating Mobility and Distance". American Sociological Review. V, pp. 845-867.

Tolosa, H.C. and Reiner, T.A. 1970. "The Economic Programming of a System of Planned Poles". Economic Geography. XLVI: 3, pp. 449-458.

Ullman, E.L. 1941. "A Theory of Location for Cities". American Journal of Sociology. XLVI, pp. 853-864.

Williams, A.V. and Zelinsky, W. 1970. "On Some Patterns in International Tourist Flows". Economic Geography. XLVI: 4, pp. 549-567.

Wolpert, J. 1965. "Behavioral Aspect of the Decision to Migrate". Papers and Proceedings of the Regional Science Association. XV, pp. 159-169.

C. Papers, Reports, Studies, Theses

Abler, R. 1968. "The Geography of Intercommunications Systems: The Post Office and Telephone Systems in the United States". Unpublished Ph.D. dissertation, University of Minnesota.

--------. 1971b. "Geographical Futuristics". Address prepared for the Session on the Future of Geography in Teaching and Research, Twenty-First Annual Meeting Canadian Association of Geographers, Waterloo, Ontario: June.

Ackerman, E.A. 1958. Geography as a Fundamental Research Discipline. Research Paper No. 53. Chicago: Department of Geography. University of Chicago.

Borchert, J.R. 1963. The Urbanization of the Upper Midwest 1930-1960. Urban Report No. 2. Upper Midwest Economic Study.

-------- and Adams, R.B. 1963. Trade Centers and Trade Areas of the Upper Midwest. Urban Report No. 3. Upper Midwest Economic Study.

Boudeville, J.R. 1972. "Polarization, Environment and Impediments to Growth". Paper presented to the I.G.U. Symposium on Problems of Slow Growth and Stagnant Areas within Developed Countries. I.G.U. Congress Symposium Sa9. St. John's, August.

Brams, S.J. 1966b. "Flow and Form in the International System". Unpublished Ph.D. dissertation, Department of Political Science, Northwestern University.

Brenton, G. 1972. "Resettlement in Newfoundland: Relocation and Hierarchical Diffusion Towards Regional Development". Unpublished Report, Department of Geography, Memorial University of Newfoundland.

Brooks, A.M. 1963. "Geographic Impacts on Rural Telephony in North Dakota". Unpublished M.A. Thesis, Department of Geography, University of North Dakota.

Brox, O. 1969. Maintenance of Economic Dualism in Newfoundland. St. John's: Institute of Social and Economic Research, Memorial University of Newfoundland.

Canning, S. 1971. "Outport Newfoundland: The Potential for Development Planning". Unpublished M.A. Thesis, Department of Town and Regional Planning, Glasgow University.

Copes, P. 1971. "Community Resettlement and Rationalization of the Fishing Industry in Newfoundland". Paper presented to the Fifth Annual Meeting Canadian Economic Association. Memorial University of Newfoundland, June, and cited in The Evening Telegram. June 7, 1971, pp. 1-2.

Courtney, D.S. 1972. "The Newfoundland Resettlement Programs: A Case Study in Spatial Re-Organization and Growth Centre Theory". Unpublished Report, Department of Geography, Memorial University of Newfoundland.

Fox, C., ed. 1966. The Role of Growth Centers in Regional Economic Development. Amos, Iowa: Department of Economics, State University of Science and Technology.

Friedmann, J.R. 1967. "A General Theory of Polarized Development". Working paper, San Diego: Ford Foundation.

Hansen, N.M. 1968. "Growth Centers and Regional Development. Some Preliminary Considerations". Discussion Paper 5. Program on the Role of Growth Centers in Regional Economic Development. Lexington, Kentucky: University of Kentucky.

Hansen, J.C. 1972. "Regional Disparities in Norway with Reference to Marginality". Paper presented to the Institute of British Geographers Annual Conference, Aberdeen, January.

Head, C.G. 1964. "Settlement Migration in Central Bonavista Bay". M.A. Thesis, MacMaster University.

Herrick, C.S. 1971. "Migration as an Adaptive Strategy in Newfoundland: A Preliminary Report". Institute of Social and Economic Research, Memorial University of Newfoundland.

Iverson, N. and Matthews, D.R. 1968. Communities in Decline: An Examination of Household Resettlement in Newfoundland. St. John's: Institute of Social and Economic Research, Memorial University of Newfoundland.

Kuklinski, A.R. 1968. "Growth Poles and Growth Centres in Regional Policies and Planning. Remarks for Discussion". Geneva: United Nations Institute for Social Development.

--------, ed. 1971. "Covering Note", Growth Poles and Growth Centres in Regional Policies and Planning - Seven Case Studies. Geneva: United Nations Research Institute for Social Development, pp. i-iv.

Maki, W. 1966. "Growth Centers and Regional Development". The Role of Growth Centers in Regional Economic Development. Edited by C. Fox. Amos, Iowa: Department of Economics, State University of Science and Technology.

Mid-Canada Development Foundation. 1971. Mid-Canada Conference Task Force Reports. Toronto.

Moseley, M.J. 1972. "Growth Centres - A Shibboleth?" Lever-hulme Project. Norwich: Centre for East Anglia Studies, University of East Anglia, November.

McDaniel, R. and Hurst, M.E.E. 1968. A Systems Analytic Approach to Economic Geography. Commission on College Geography Publication No. 8. Washington, D.C.: Association of American Geographers.

Nichols, V. 1969. "Growth Poles: An Investigation of Their Potential as a Tool for Regional Economic Development". Discussion Paper 30. Philadelphia: Regional Science Research Institution.

O'Brien, J.W. 1961. "Public and Privately Owned Telephone Systems: An Economic Comparison". Unpublished Ph.D. dissertation, Economics Department, McGill University.

Parr, J.B. 1964. "The Nature and Function of Growth Poles in Economic Development" (mimeo). University of Washington. Paper read at Sixty-First Annual Meeting of the Association of American Geographers. Abstract in Annals of Association of American Geographers, LV: 4, December 1965, p. 638.

Peeples, R. 1970. "The Economic Impact of an Airport". Program on the Role of Growth Centers in Regional Economic Development. Discussion Paper No. 24, Center for Economic Development, The University of Texas at Austin.

Raup, Dr. 1969. Quoted in "Verbatim Proceedings Session A", Collected Papers: Colloquium on Regional Economic Development. Canadian Association of Geographers Annual Conference, Department of Geography, Memorial University of Newfoundland, August.

Robb, A.L. and Robb, R.E. 1969. A Cost-Benefit Analysis of the Newfoundland Resettlement Program. St. John's, Institute of Social and Economic Research, Memorial University of Newfoundland.

Schroeder, A. 1958. "Determination of the Telephone Hinterland of Metropolitan Chicago". Unpublished M.A. dissertation, University of Chicago.

Schwind, P.J. 1971. Migration and Regional Development in the United States 1950-1960. Research Paper No. 133. Department of Geography, University of Chicago.

Storey, K.J. 1972. "Some Structural Characteristics of the Newfoundland Economy: An Application of Digraph Theory". Paper presented at Symposium on Problems of Slow Growth and Stagnant Areas within Developed Countries. I.G.U. Congress Symposium, Sa9, St. John's, August.

---------. 1973. "Growth Poles and Growth Centres: A Selected Bibliography". Department of Geography, Memorial University of Newfoundland.

Vogelback Computing Centre. 1968. User Writeup Generalized Analysis of Transaction Flows. Northwestern University.

Wadel, C. 1969. Marginal Adaptations and Modernization in Newfoundland: A Study of Strategies and Implications in the Resettlement and Redevelopment of Outport Fishing Communities. Institute of Social and Economic Research, Memorial University of Newfoundland.

Weinand, H. 1969. "The Spatial Repercussion of Economic Growth and Development: A Case Study of Nigeria". Unpublished M.Sc. Thesis, Geography Department, University of Wisconsin.

Wells, D.G. 1969. "Regional Economic Impact of Two Growth Centres in Newfoundland: An Application of Industrial Complex Analysis". M.A. Thesis, Department of Economics, Memorial University of Newfoundland.